St. Luke's Medical Center
Quezon City · Global City
We love life.

CLINICAL OUTCOMES

VOLUME III

CLINICAL OUTCOMES OUTLINES.indd 1 16/01/2018 7:04 PM

FREDERICK Y. DY
Chairman

EDGARDO R. CORTEZ, MD, FPCS, FACS
President and CEO

ARTURO S. DE LA PEÑA, MD, FPCS, FACS
SVP and Head,
Medical Practice Group
and Medical Director
St. Luke's–Global City

JOSE B. MORAN, MD
SVP and Head,
Medical Practice Group
and Medical Director
St. Luke's–Quezon City

ISAAC DAVID E. AMPIL II, MD, MSC, FPCS
SVP and Head,
Research and Biotechnology

JO C. AGUILAR
SVP and Head,
Marketing Group and Industry Relations

CATHERINE C. ROMERO, MHA, MSPH
Associate Director, Health Services
Outcomes Research

NIAN L. RIGOR
Editor-in-Chief

MA. GISELLE D. ABIADA
WESLEY U. SAN SEBASTIAN
KIMBERLY ANN Y. YU
Corporate Communications Group

COPYRIGHT © 2018
ST. LUKE'S MEDICAL CENTER
A St. Luke's Corporate Communications Department, Marketing Group Project

St. Luke's Medical Center–Global City
Rizal Drive cor. 32nd Street and 5th Ave., Bonifacio Global City, Taguig City
(+632) 7897700 ext. 5082

St. Luke's Medical Center–Quezon City
279 E. Rodriguez Sr. Blvd., Quezon City
(+632) 7230101/0301 ext. 4214

www.stlukes.com.ph

Published by
St. Luke's Medical Center
in cooperation with
Eastgate Publishing
Corporation

EASTGATE PUBLISHING CORPORATION

Simeon S. Ventura Jr.
President

Krisna Isabel V. de Leon
Project Director

EDITORIAL TEAM

Arnel E. Medrano
Editor

Beatrix C. Cahucom
Martha Therese C. Toledana
Nicolo Paolo A. Pascual
Marielle Guia A. Tagle
Coordinators

Rodel D. Ambas
Copy Editor

Leilani Anne B. Chavez
Louie-An Pilapil
Writers

ART TEAM

Mariah Chrysallie N. Nerona
Therese Marie W. Sanico
Olivia Repotente
Designers

Noel M. Salazar
Rommel C. Bundalian
Photographers

Boyd James D. Mamba
Ralph D. Guibani
Ryan Jay T. Kabigting
Jethro Ian A. Lacson
Illustrators

Jose Mari Galvez
Final Artist

Pia Marie E. Cortez
Laurraine Joy S. Capistrano
Pauline Nicole A. Casin
Jean Camille D. Silva
Interns

info@eastgatepublishing.com
www.eastgatepublishing.com

TABLE OF CONTENTS

4 *MESSAGE FROM THE PRESIDENT AND CEO*
5 *MESSAGE FROM THE SENIOR VICE PRESIDENT FOR MEDICAL PRACTICE GROUP AND MEDICAL DIRECTOR, ST. LUKE'S-GLOBAL CITY*
6 *MESSAGE FROM THE SENIOR VICE PRESIDENT FOR MEDICAL PRACTICE GROUP AND MEDICAL DIRECTOR, ST. LUKE'S-QUEZON CITY*
7 *MESSAGE FROM THE SENIOR VICE PRESIDENT AND HEAD, MARKETING GROUP AND INDUSTRY RELATIONS*

CLINICAL OUTCOMES

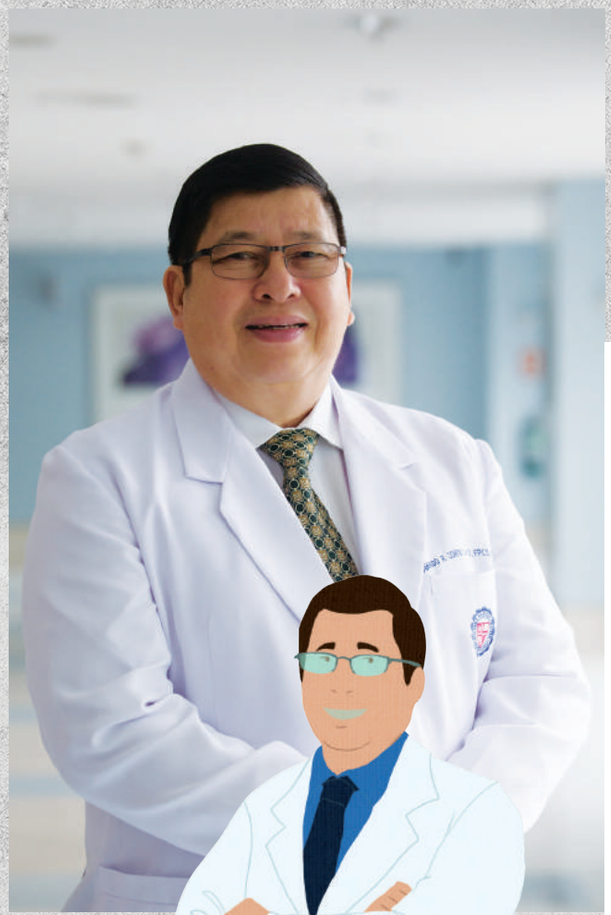
8 *THE HIGH ROAD TO MEDICAL EXCELLENCE*
10 *UNIVERSAL NEWBORN HEARING SCREENING: THE ST. LUKE'S EXPERIENCE*
14 *QUALITY SURVIVAL OF PRETERM INFANTS*
18 *NEURO EFFECTS OF BALLROOM DANCING ON ELDERLY WITH IMPAIRED MEMORY*
22 *EXPLORING MINIMALLY INVASIVE PROCEDURES FOR APPENDICITIS*
26 *MANAGING RISKS IN LAPAROSCOPIC CHOLECYSTECTOMY*
30 *MONITORING THYROIDECTOMY OUTCOMES*
34 *YIELDING THE BEST PRACTICES IN INGUINAL HERNIA REPAIR*
38 *OUTCOMES OF PATIENTS WHO UNDERWENT BREAST CANCER SURGERY*
42 *OUTCOME OF PEDIATRIC PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA*
46 *REGAINING THE ABILITY TO BREATHE: TREATMENT OF BILATERAL VOCAL FOLD IMMOBILITY*
50 *TOTAL JOINT REPLACEMENT SURGERY*
54 *STROKE PATIENTS' SATIFACTION SURVEY: WHY DOES IT MATTER AND WHY WE CARE*
58 *GIVING IMMEDIATE TREATMENT TO STROKE PATIENTS*
62 *PERCUTANEOUS NEPHROLITHOTRIPSY (PCNL) FOR KIDNEY STONE REMOVAL*
66 *LEADING THE WAY IN ADVANCED TECHNOLOGIES*
70 *PRIMARY ANGIOPLASTY OUTCOMES IN STEMI PATIENTS*
74 *TRANSCATHETER AORTIC VALVE REPLACEMENT: EFFECTIVE FOR AORTIC VALVE STENOSIS*
78 *KIDNEY TRANSPLANT OUTCOMES*

BREAKTHROUGHS

82 *CUTTING-EDGE TREATMENT FOR ATRIAL FIBRILLATION*
84 *ST. LUKE'S TEAMS UP WITH JAPAN'S KOBE UNIVERSITY*
86 *ST. LUKE'S HUMAN CANCER BIOBANK: THE FUTURE OF CANCER CARE*
88 *ST. LUKE'S MEDICAL CENTER PIONEERS IN TRANSORAL ROBOTIC SURGERY IN THE PHILIPPINES*

90 *INDEX*

CLINICAL OUTCOMES OUTLINES.indd 3 16/01/2018 7:04 PM



IN PURSUIT OF A VISION

The year 2020 is soon to determine how true we are to our vision of becoming an internationally recognized academic medical center.

In its pursuit, we have been faithful to our mission of delivering state-of-the-art health care by always making the needs of our patients come first.

Our consistent efforts have been amply rewarded by accreditations and recognitions, mostly from international organizations and institutions. Whether or not these accolades are enough to make our vision fully take shape will have its moment of truth some two years from now.

Nonetheless, committing ourselves to a vision and mission has made us go a long way in making a difference in our field and setting St. Luke's apart from other hospitals.

St. Luke's has truly come at par with its counterparts in the developed countries in clinical outcomes and patient experience, both marked by continuous and systematic benchmarking that pushes us to raise the bar in every aspect of healthcare year after year. In many cases, we have to beat our own records in technological advances and best practices as our eyes are focused on becoming one of the world's best.

We climb as high as we dig deep into research and biotechnology, moving spiritedly in both directions to firmly anchor the pursuit of our vision on solid ground.

Thus, our St. Luke's College of Medicine–William H. Quasha Memorial has made its own advances in creating a culture of excellence right from the matrix of the medical profession, making it a key player in our 2020 vision of becoming an internationally recognized academic medical center.

What we have to show for it are not just the modern facilities, international awards, and comprehensive historical and technical documented data. We have a large number of patients whom we have made to, not just survive, but live a quality life and who will always be our priority.

The patients simply make St. Luke's vision and mission worth all our passionate pursuit.

EDGARDO R. CORTEZ, MD, FPCS, FACS
President & CEO

CLINICAL OUTCOMES OUTLINES.indd 4 16/01/2018 7:04 PM

DRIVEN TO SET NEW RECORDS

Taking the prestige of St. Luke's Medical Center to the Bonifacio Global City and making it live up to its name is a tall order.

For seven years now, that challenge is ironically our source of pride, driving us to introduce many innovations such as the robotic surgery and the Transcatheter Aortic Valve Replacement (TAVR), among others. Both procedures involve complex equipment, new technologies, precision protocols, and strain to surgeons, but are less invasive and taxing to patients.

Clearly, we are taking the extra mile in capital inputs to improve outputs in patients' terms. Improving their quality of life is worth every step in that direction through all of seven years.

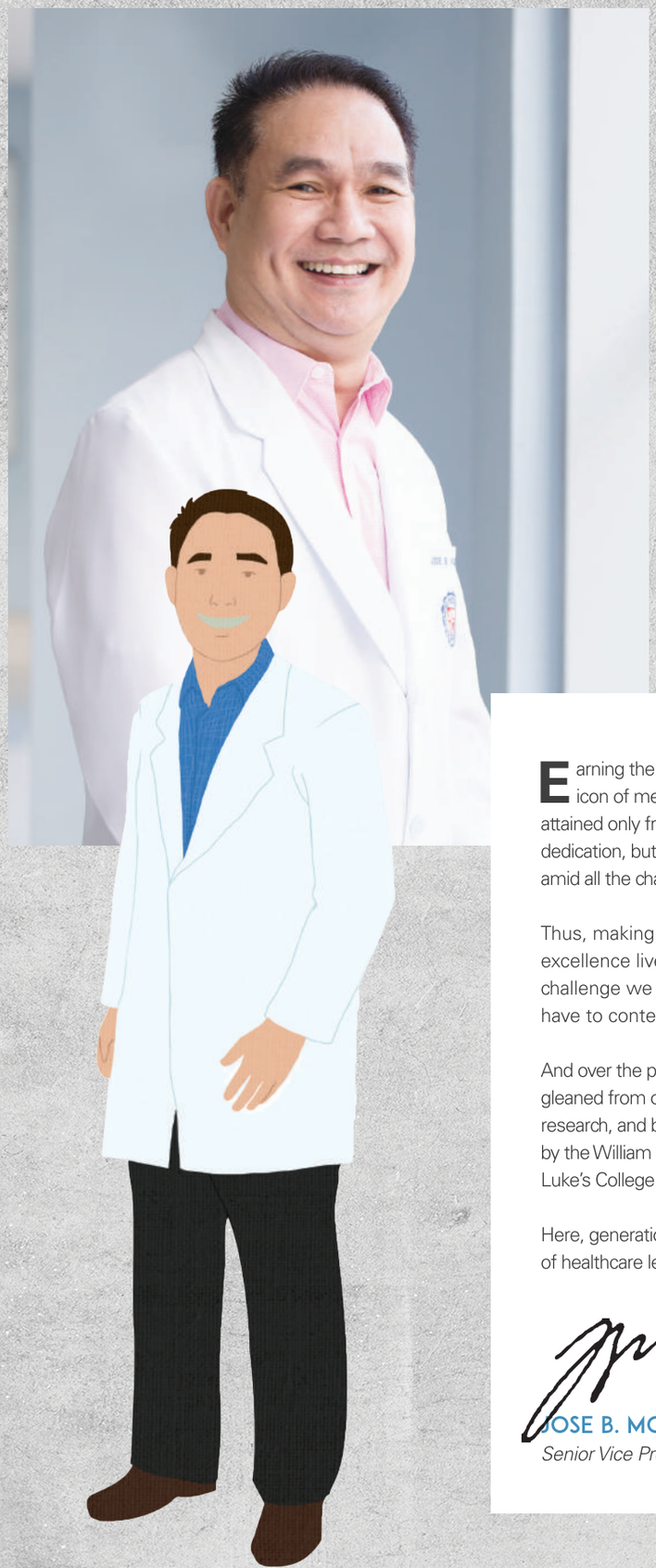
Marked by innovations and adherence to global benchmarks, St. Luke's–Global City has performed well in technology-intensive procedures, setting national records in ST Segment Elevation Myocardial Infarction (STEMI), Percutaneous Nephrolithotripsy (PCNL), Total Joint Replacement, Bilateral Vocal Fold Immobility (BVFI), and stroke outcomes.

We have even introduced a program on "Improving Neurocognition with Dance and Kinesthetics", whose acronym is aptly INDAK.

Through it all, we have endeavored to make our patients' well-being define the essence of St. Luke's and serve as its source of institutional and professional fulfillment.

ARTURO S. DE LA PEÑA, MD, FPCS, FACS
Senior Vice President for Medical Practice Group & Medical Director, St. Luke's–Global City

CLINICAL OUTCOMES OUTLINES.indd 5 16/01/2018 7:04 PM



MAKING A TRADITION OF EXCELLENCE LIVE ON

Earning the distinction as the country's icon of medical excellence can be attained only from years of hard work and dedication, but even harder is keeping it amid all the challenges from various fronts.

Thus, making this long tradition of excellence live on is the biggest challenge we at St. Luke's–Quezon City have to contend with year after year.

And over the past year, that pursuit can be gleaned from our advances in education, research, and biotechnology, all iconized by the William H. Quasha Memorial at St. Luke's College of Medicine in Quezon City.

Here, generations after generations of healthcare leaders emerge, each molded in a culture of excellence that is characteristically St. Luke's.

The graduates are further honed by a robust residency and fellowship program that reinforces the culture, passes on the torch, and keeps the passion burning from the mentors to the protégés.

The result is the continued upgrading of facilities and resources such as the rise of our Human Cancer Biobank, and the improvements in our clinical outcomes, especially in appendectomy, cholecystectomy, thyroidectomy, inguinal hernia, breast cancer, acute lymphoblastic leukemia, kidney transplantation, and the quality survival of preterm infants.

JOSE B. MORAN, MD
Senior Vice President for Medical Practice Group & Medical Director, St. Luke's–Quezon City

CLINICAL OUTCOMES OUTLINES.indd 6 16/01/2018 7:05 PM

BRAND CONSISTENCY OF ST. LUKE'S MEDICAL CENTER

Through all the changes in the medical field, St. Luke's brand statement has never changed.

Our philosophy of existence remains captured in the same tagline: "Putting the Needs of Patients First."

As such, St. Luke's has become duty bound to cope with the ever-changing needs of patients, compelling us to keep up with the demands of the times and consistently stay ahead of the country's prevailing best practices.

In so doing, "Putting the Needs of Patients First" has become our rallying point and advocacy line, pushing and leading us toward excellence, for deep in the core of our belief system is the truth that patients deserve our best.

Hence, this book is being published for the benefit of our patients—to make them aware of their options, and learn about St. Luke's innovations and breakthroughs that can improve their lives.

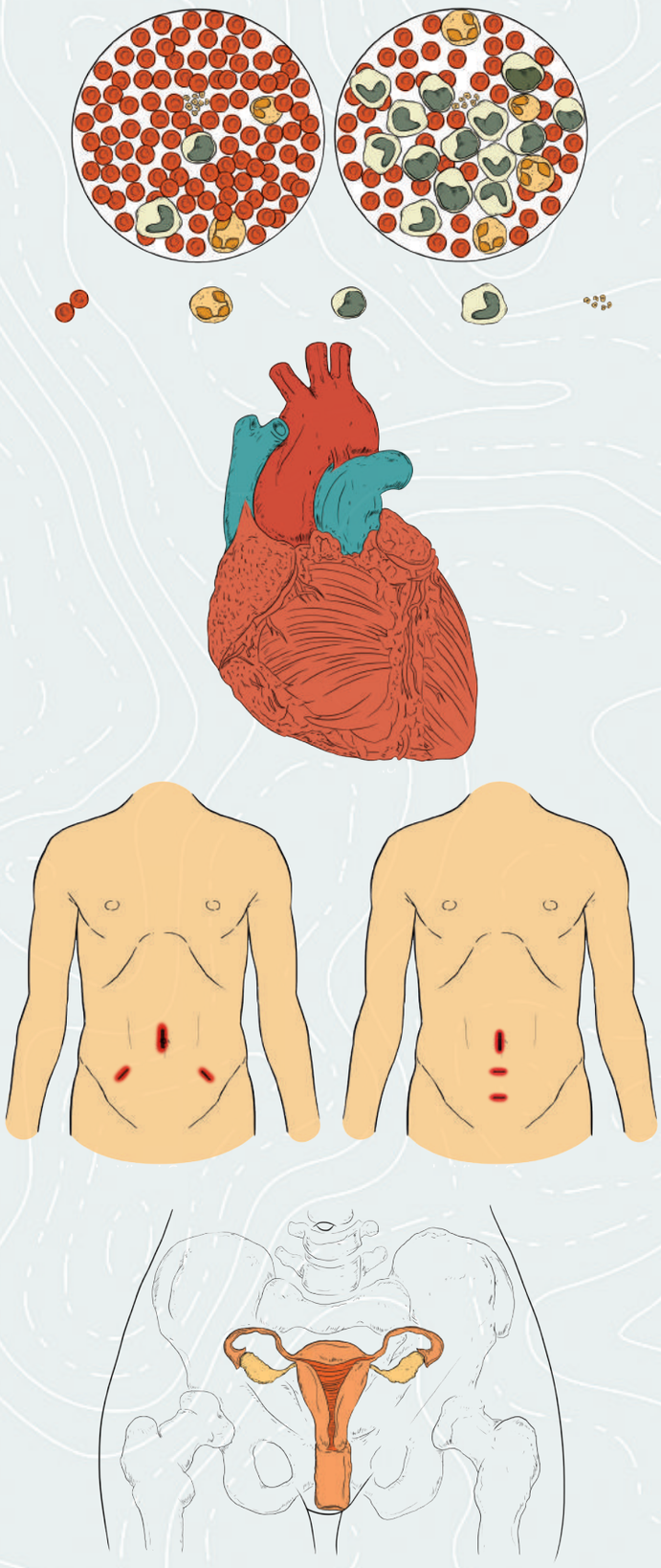
This book is therefore about great patient experience, best clinical outcomes, topnotch medical expertise, state-of-the-art technology, advance healthcare system, and class-leading service quality and safety—all constituting what it takes to put the needs of patients first.

Those attributes define the St. Luke's brand, which has consistently remained faithful to its identity throughout its history.

JO C. AGUILAR
SVP and Head, Marketing Group and Industry Relations

CLINICAL OUTCOMES OUTLINES.indd 7 16/01/2018 7:05 PM

THE HIGH ROAD TO MEDICAL EXCELLENCE



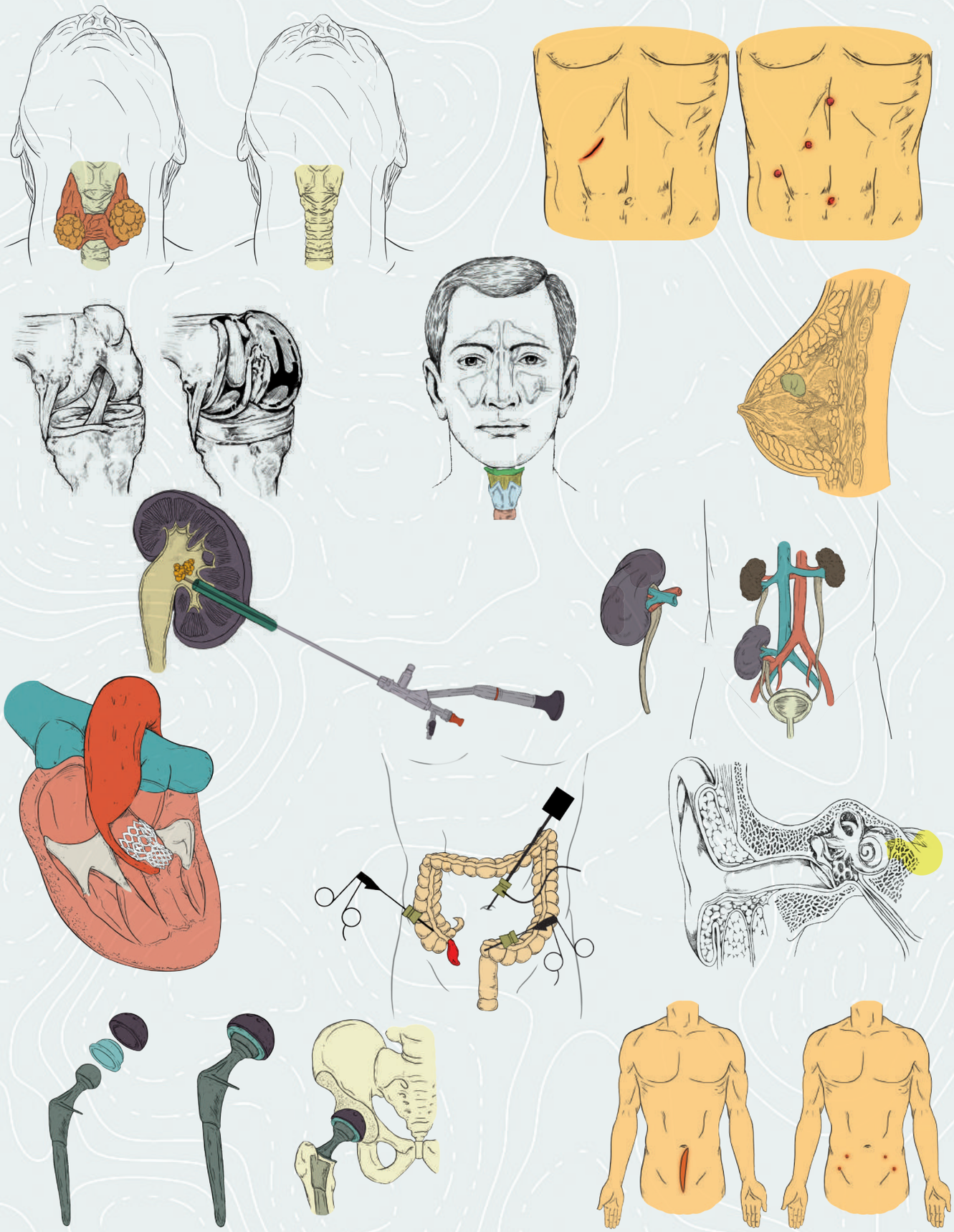
This book features the country's professional and technological advances in medicine as showcased by St. Luke's Medical Center.

Such advances are evident in St. Luke's success rates in laparoscopic appendectomy, cholecystectomy, mastectomy, prostatectomy, thyroidectomy, inguinal hernia repair, total joint replacement, angioplasty for ST Segment Elevation Myocardial Infarction, decannulation for Bilateral Vocal Fold Immobility, Transcatheter Aortic Valve Replacement for diseased aortic valves, cochlear implant for halting or reversing hearing loss, and treatment of urological diseases, leukemia, and extremely preterm infants, among many others.

These are made possible by St. Luke's deep bench of medical specialists and top-of-the-line equipment and facilities for both surgical and non-surgical procedures, pre- and post-operative treatments, and total integrated healthcare management, all regularly monitored and evaluated through its Data Quality Management system that ensures progressive and methodical improvements throughout all processes.

Thus, patient satisfaction surveys have been yielding nearly perfect scores for all performance criteria, while providing insights into how St. Luke's can raise the bar even further.

No wonder St. Luke's has emerged as among the best in the Philippines and in Southeast Asia, placing it on the high road to medical excellence and leadership in the region.



DEPARTMENT OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

UNIVERSAL NEWBORN HEARING SCREENING: THE ST. LUKE'S EXPERIENCE

JANUARY 2010 TO JUNE 2015

St. Luke's is the first Philippine hospital to establish a hearing-friendly nursery by institutionalizing its Newborn Hearing Screening Program.

CLINICAL OUTCOMES OUTLINES.indd 10 16/01/2018 7:08 PM

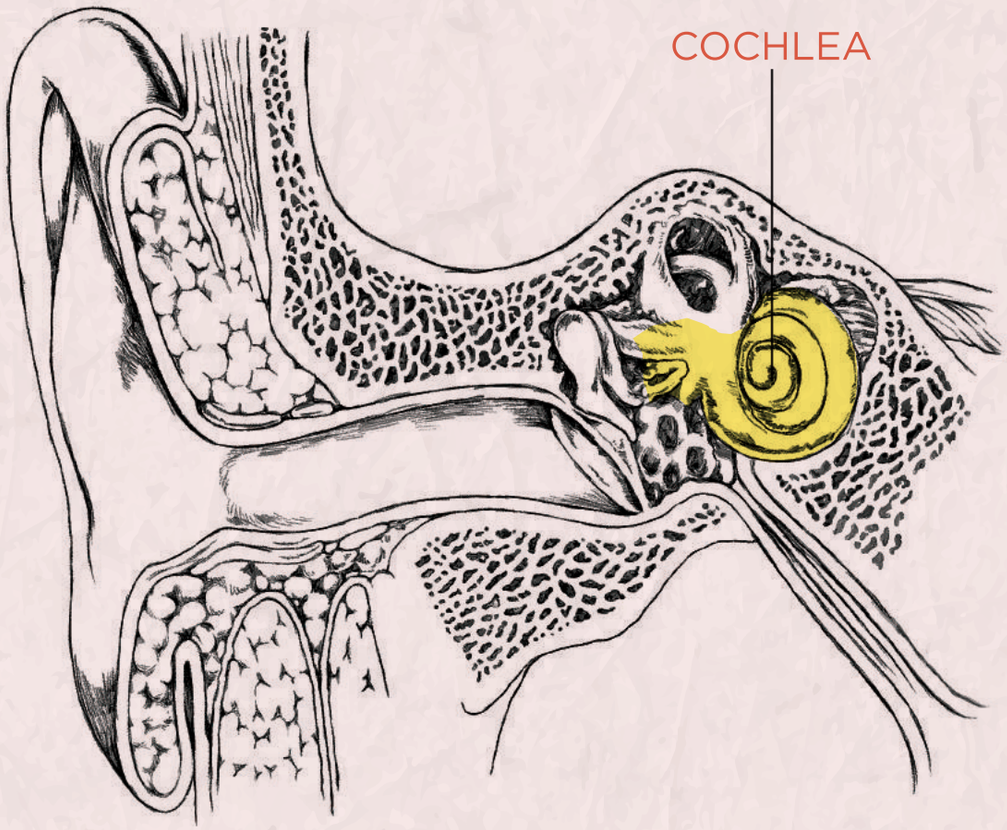
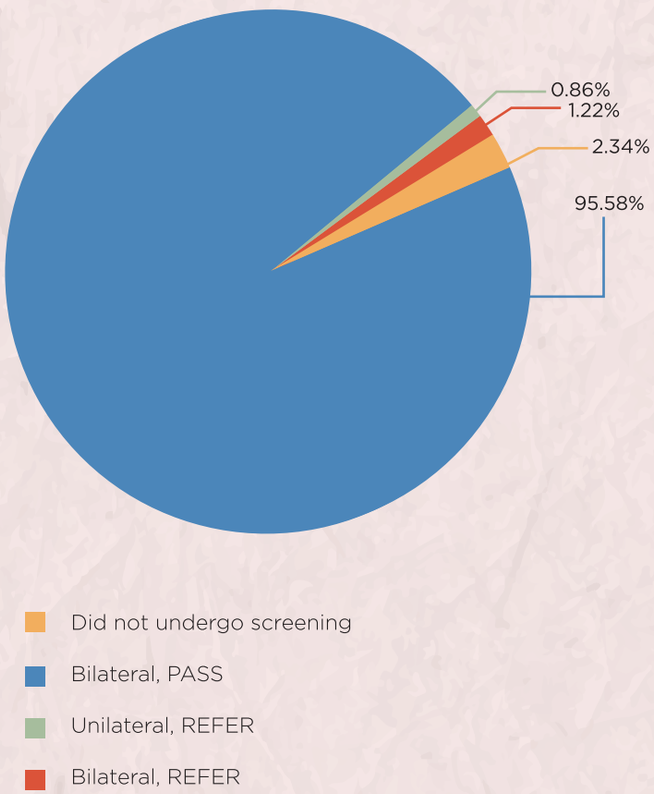


FIGURE 1

The cochlea is the sensory organ for hearing located in the inner ear.

FIGURE 2

Data from 19,138 babies born in St. Luke's Medical Center Global City and Quezon City, from January 2010 to June 2015



Hearing loss is the most common disability in the newborn, being twice as prevalent as other diseases detected by metabolic screening combined. One out of 1,000 newborns has severe to profound hearing impairment and five out of 1,000 have lesser degrees of the condition.

In the Philippines, it was reported that one out of 724 newborns has permanent congenital hearing loss. Moderate bilateral (both ears) permanent hearing loss in early childhood can delay speech, language, and cognitive development, which is also experienced by children with mild or unilateral hearing impairment.

To avert the negative impact of hearing loss on the child and his family, the global recommendation is to do Universal Newborn Hearing Screening (UNHS) by one month of age. Those who fail the initial screening twice should undergo diagnostic evaluation by three months of age. Children documented with significant hearing loss should be fitted with hearing aids by six months of age.

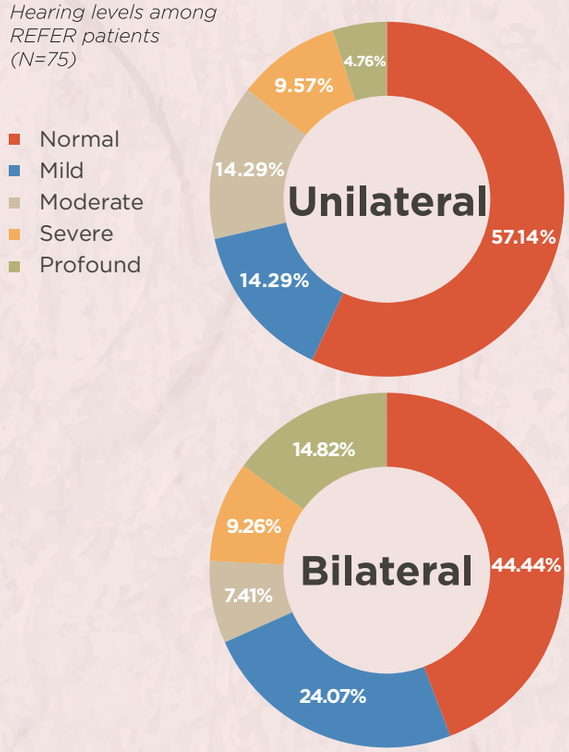
The *UNHS Act of the Philippines* (R.A. 9709) was signed into law in August 2009 following that recommendation. St. Luke's Medical Center was ahead of the law by five years, having institutionalized UNHS as part of the St. Luke's Newborn Package since 2004. A physician's request and parental consent are not required since this is an integral part of newborn care.

Data from 19,138 babies born in St. Luke's Global City and Quezon City from January 2010 to June 2015 are shown in Figure 2.

CLINICAL OUTCOMES OUTLINES.indd 11 16/01/2018 7:08 PM

FIGURE 3

Hearing levels among REFER patients (N=75)



St. Luke's Hearing and Balance Disorders Laboratory is staffed by highly qualified Audiologists and well-trained Neuro-otologists who specialize in otolaryngology and have further specialized into neurological conditions of the ear.

Twenty-one percent of those with REFER results underwent diagnostic testing as shown in Figure 3. Comparative data from other ASEAN (Association of Southeast Asian Nations) countries are shown in Figure 4.

A Hearing Evaluation for Anticipated Risk (HEAR) Form was recently introduced into the program. This is to identify babies with risk factors who will undergo a different screening procedure with less false positive results to streamline the program. Figure 5 shows the flowchart of the Universal Newborn Hearing Screening and Habilitation Program at St. Luke's Medical Center.

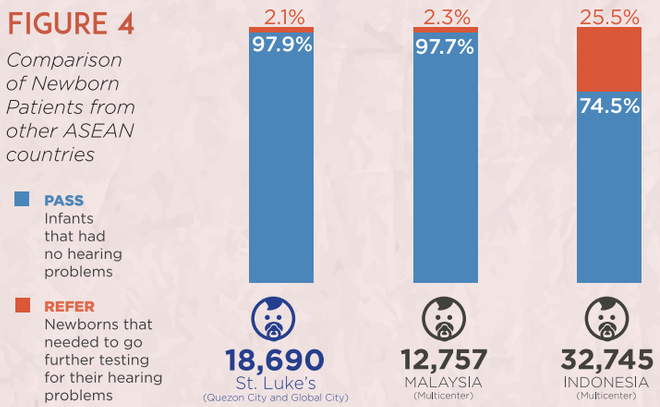
Once identified with significant hearing loss, parents are counseled and babies fitted with hearing aids and referred to a speech therapist for habilitation. If there is no improvement despite optimum hearing aid fitting, they are referred to the cochlear implant team for assessment.

Cochlear implant is a surgically implanted device to stimulate the hearing nerve directly. In 1997, St. Luke's was the first hospital in the country where the cochlear implant surgery was performed.

St. Luke's efforts have truly revolutionized the early detection and management of children with hearing disability, thereby freeing them from the bondage of absolute silence.

FIGURE 4

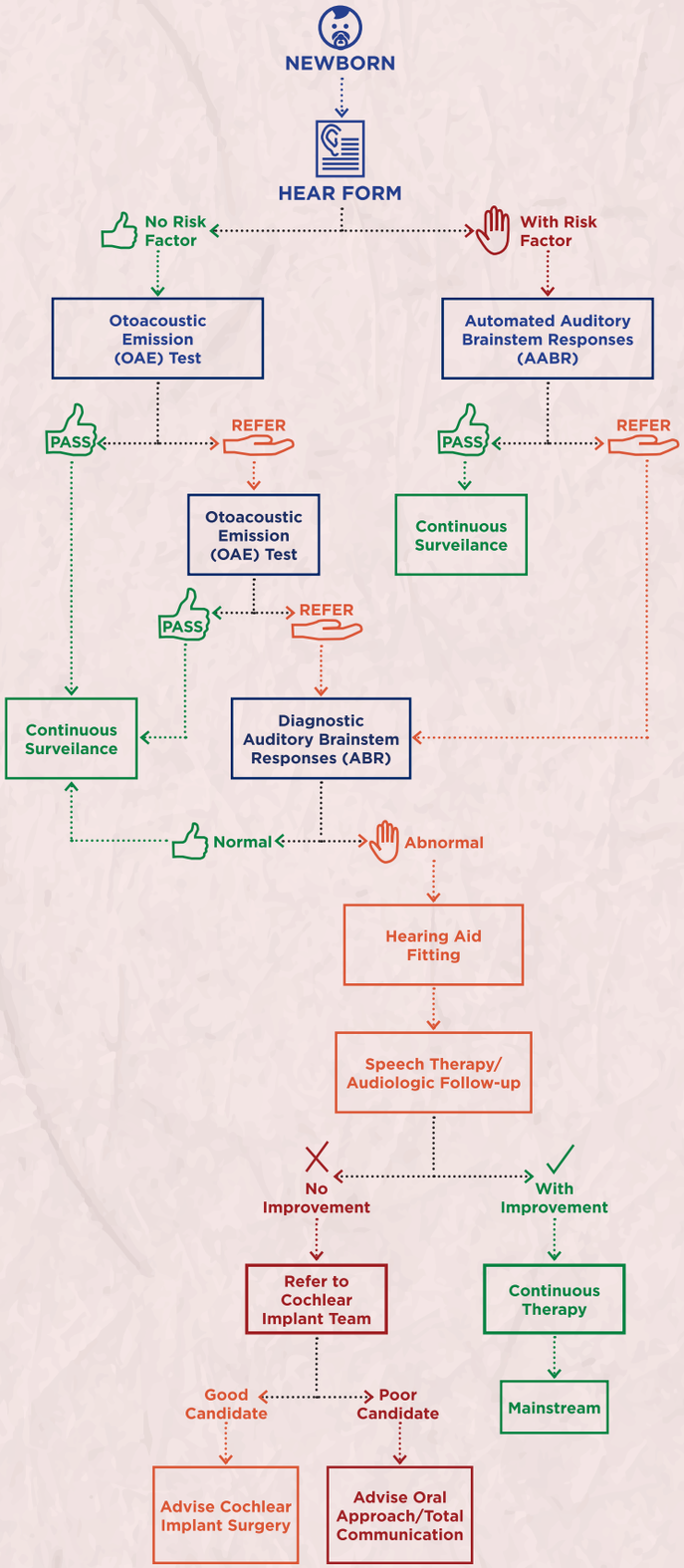
Comparison of Newborn Patients from other ASEAN countries



CLINICAL OUTCOMES OUTLINES.indd 12 16/01/2018 7:08 PM

FIGURE 5

Flowchart of the Universal Newborn Hearing Screening and Habilitation Program at St. Luke's Medical Center



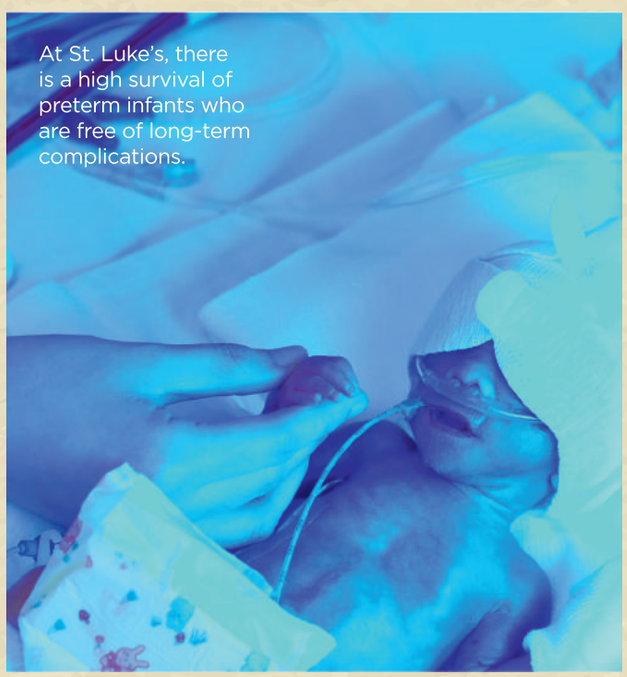
Dr. Norberto V. Martinez, Head of the Hearing and Balance Disorders Laboratory of St. Luke's–Global City (seated) with his team (L-R): Jana Madonna P. Uy (Audiologist), Catherine D. Valle (Audiologist), Anne Jellie A. Liwag (Audiologist), Charles Henry C. Castañeda, RN (Section Manager), and Leilani N. Bernardo, RN (Audiometrist).

CLINICAL OUTCOMES OUTLINES.indd 13 16/01/2018 7:08 PM

INSTITUTE OF PEDIATRICS AND CHILD HEALTH
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

QUALITY SURVIVAL OF PRETERM INFANTS

JANUARY 2011 TO DECEMBER 2016

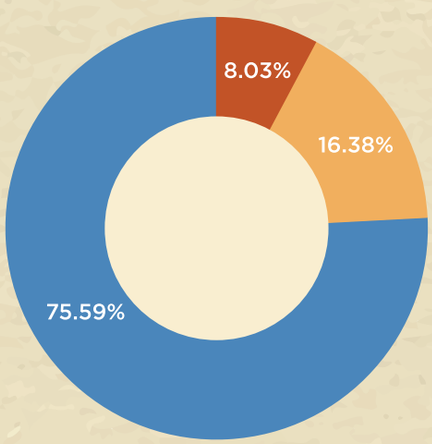


At St. Luke's, there is a high survival of preterm infants who are free of long-term complications.

Dr. Maria Esterlita V. Uy, Head of the Neonatal Intensive Care Unit (NICU) of St. Luke's–Quezon City (center) with the Neonatal Intensive Care Unit (NICU) staff (L-R): Chona Suligiun, RN, Pauline Joy de Leon, RN, Riza Evangelista, RN, Angeles A. Tumpap, RN, Angelica Stephanie de los Santos, RN, and Ma. Carmela A. Arcillas, RN.

FIGURE 1

Percentage Distribution by Age of Gestation (AOG) of the Preterm Infants born at St. Luke's Medical Center—Quezon City, Institute of Pediatrics and Child Health January 2011 to December 2016 (N=635)



Preterm births have been increasing over the past several years, largely attributed to a rise in the number of older mothers who delay pregnancies, multiple gestations from infertility treatments, and improvements in obstetrics care of complicated pregnancies that sometimes necessitate induced premature delivery. The availability of advanced neonatal intensive care also assures obstetricians that optimal care will be given to these preterm infants[1].

Global trends show not only an increase in overall survival rate of preterm babies, but also a rise in intact or quality survival. Preterm survival without major neonatal morbidities decreases the risk of long-term neurologic impairment[2].

Preterm survivors compared with those born full term are more likely to have neurodevelopment disabilities. The risk of these impairments increases with decreasing gestational age. These include impaired cognitive skills, motor deficits including mild fine or gross motor delay and cerebral palsy (CP), sensory impairment including vision and hearing losses, and behavioral and psychological problems[3].

In 2010, among 13 million preterm births (<37 weeks age of gestation) who survived beyond the 1st month, 2.7% were estimated to have moderate to severe neurodevelopmental impairment, and a further 4.4% have mild impairment. Many more have specific learning or behavioral disabilities or reduced physical or mental health[4].

The objective in the care of these preterm infants is not only to improve survival, but also to ensure that these preterm infants are free of long-term morbidities that will allow them to reach their full potential as adults who are productive and enjoying life.

It is important to continuously improve newborn care through advancement of laboratory procedures. These allow smaller volumes of blood or other specimen without compromising accuracy of results. The availability of newer and superior equipment for these fragile infants will ensure their safety and comfort. More importantly, the family-centered care provided by competent and compassionate neonatologists, resident doctors, and neonatal intensive care unit (NICU) nurses will ensure a holistic approach to the management of these high-risk infants.

Performance Measures:

- Overall Survival Rate
- Intact Survival Rate or Quality Survival
- Severe Retinopathy of Prematurity (ROP) Incidence Rate
- Bronchopulmonary Dysplasia (BPD) Incidence Rate
- Severe Intraventricular Hemorrhage (IVH) Incidence Rate

RESULTS

From January 2011 to December 2016, there were 635 preterm births with the age distribution illustrated in Figure 1: 75.59% (480) under 32 to <37 weeks (moderate to late preterm), 16.38% (104) under 28 to <32 weeks (very preterm) and 8.03% (51) under <28 weeks (extremely preterm).

CLINICAL OUTCOMES OUTLINES.indd 15 16/01/2018 7:10 PM

FIGURE 2

Yearly Survival Rate of Preterm Infants (<37 weeks AOG) born at St. Luke's Medical Center—Quezon City Institute of Pediatrics and Child Health, January 2011 to December 2016

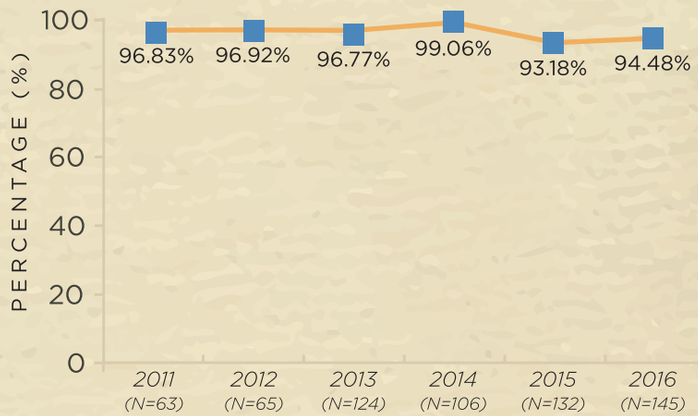
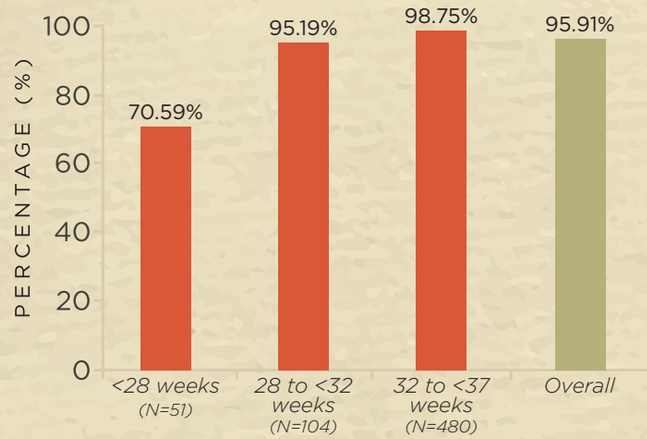


FIGURE 3

Survival Rate of Preterm Infants (Based on Different Gestational Ages) born at St. Luke's Medical Center—Quezon City Institute of Pediatrics and Child Health, January 2011 to December 2016



St. Luke's–Quezon City's Neonatal Intensive Care Unit (NICU) has the neonatal intensive care, intermediate care, and isolation care sections with a 34-bed capacity.

CLINICAL OUTCOMES OUTLINES.indd 16 16/01/2018 7:11 PM

FIGURE 4

Survival Rate of Extremely Preterm Infants (≤28 weeks AOG) born at St. Luke's Medical Center—Quezon City Institute of Pediatrics and Child Health, January 2011 to December 2016

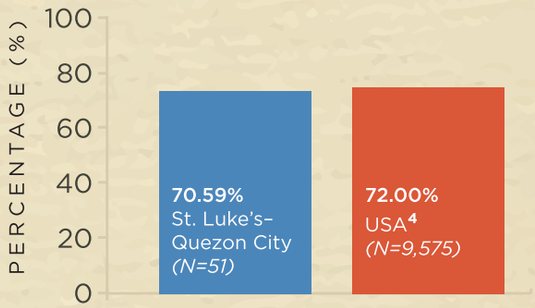


FIGURE 5

Survival Rates of Extremely Preterm Infants Stratified into Different Gestational Ages (<28 weeks AOG) born at St. Luke's Medical Center—Quezon City vs. International Benchmarks, Institute of Pediatrics and Child Health January 2011 to December 2016

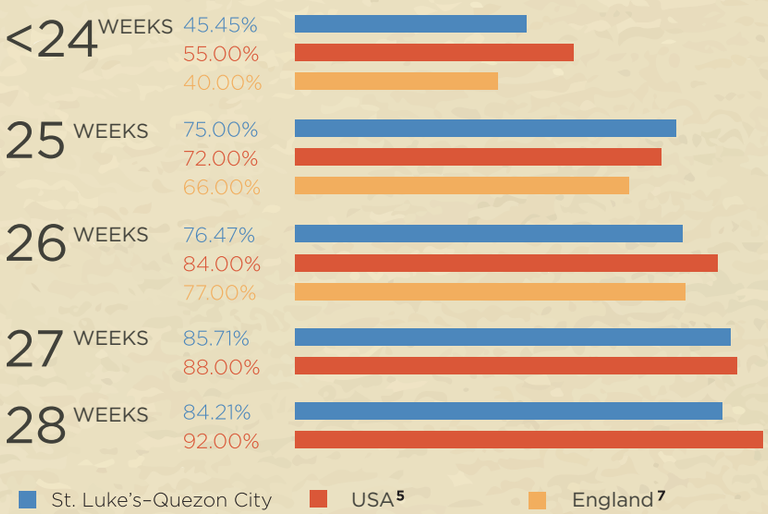


FIGURE 6

Incidence Rates of BPD, Severe ROP, and Severe IVH of Extremely Preterm Infants (<28 weeks AOG) born at St. Luke's Medical Center-Quezon City vs. International Benchmarks, Institute of Pediatrics and Child Health, January 2011 to December 2016

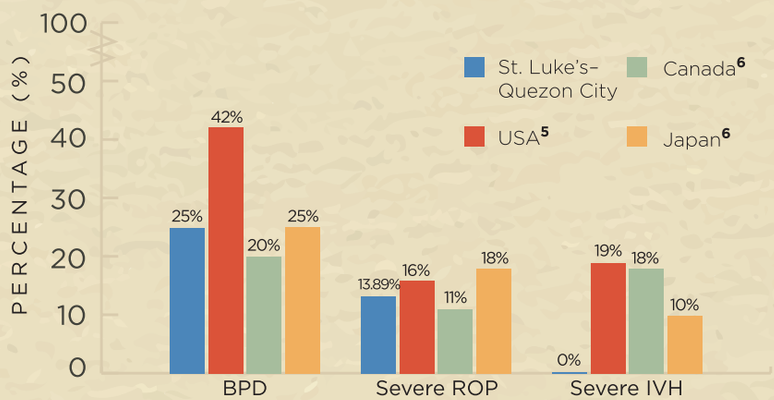


Figure 2 showed that the yearly preterm survival rates from 2011 to 2016 remained exceptionally high, ranging from 93.18% to 99.06%.

Preterm infants ≥ 28 weeks age of gestation (AOG) at birth showed an overall survival rate of 98.12%, while those who were <28 weeks AOG had a 70.59% survival rate. Figure 3 displayed the survival of the premature infants divided into different gestational clusters. The extremely premature infants (<28 weeks AOG), very premature infants (28 to <32 weeks AOG), and moderately to late premature infants (32 to <37 weeks AOG) had survival rates of 70.59%, 95.19%, and 98.75%, respectively.

As seen in Figure 4, the survival rate of our extremely premature infants (<28 weeks AOG) from 2011 to 2016 was comparable with the rates reported in the USA. Further stratification by AOG among the extremely premature infants showed the following survival rates: 45.45% for <24 weeks AOG, 75% for 25 weeks AOG, 76.47% for 26 weeks AOG, 85.71% for 27 weeks AOG, and 84.21% for 28 weeks AOG. Again, these rates were comparable and at times higher than the international benchmarks.

Survival without risk of long-term complications were assessed using surrogate measures, such as the presence of bronchopulmonary dysplasia (BPD), severe intraventricular hemorrhage (IVH) (Grade 3–4) and severe retinopathy of prematurity (ROP). As shown in Figure 6, our BPD (25%), severe ROP (13.89%) and severe IVH (0%) rates were similar or even lower than international benchmarks.

REFERENCES

1 VanderWeele T, Lantos J, Lauderdale D. Rising preterm birth rates: Changing demographics or changing obstetric practice? Soc Sci Med. (2012);74:196-201.

2 Mehler K(1), Grimme J, Abele J, Huenseler C, Roth B, Kribs A. Outcome of extremely low gestational age newborns after introduction of a revised protocol to assist preterm infants in their transition to extrauterine life. Acta Paediatr. 2012;101(12):1232-9.

3 Mandy, G. (2017). Long-term complications of the preterm infant. Retrieved from https://www.uptodate.com/contents/long-term-complications-of-the-preterm-infant.

4 Blencowe H, Lee A, Cousens S, et al. Preterm birth-associated neurodevelopmental impairment estimates at regional and global levels for 2010. Pediatr Res. 2013;74(suppl.1):17-34.

5 Stoll BJ, Hansen NI, Bell EF, et al; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Neonatal outcomes of extremely preterm infants from the NICHD Neonatal Research Network. Pediatrics. 2010; 126(3): 443-456.

6 Isayama T, Lee SK, Mori R, Kusuda S, Fujirama M, Ye XY, et al. Comparison of mortality and morbidity of very low birth weight infants between Canada and Japan. Pediatrics 2012; 130:e957-65.

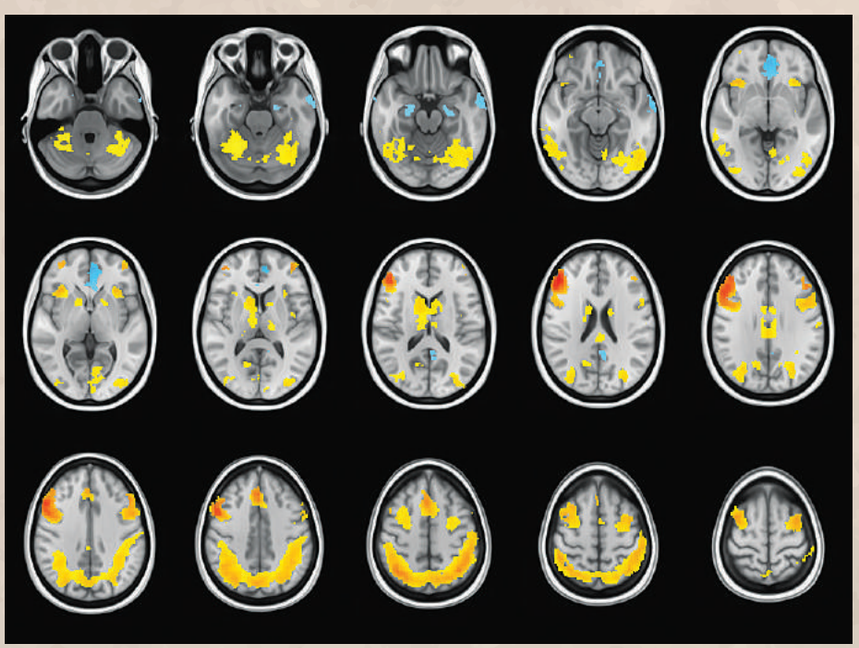
7 Costeloe, K., et al; Short term outcomes after extreme preterm birth in England: comparison of two birth cohorts in 1995 and 2006 (the EPICurestudies). BMJ. 2012; 345:e7976doi:10.1136/bmj.e7976

CLINICAL OUTCOMES OUTLINES.indd 17 16/01/2018 7:11 PM

INSTITUTE FOR NEUROSCIENCES
MEMORY CENTER
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

NEURO EFFECTS OF BALLROOM DANCING ON ELDERLY WITH IMPAIRED MEMORY

CONDUCTED JULY 2014 TO DECEMBER 2015



An image of a resting state functional magnetic resonance imaging (fMRI), which is used to measure brain activity by detecting changes in blood flow. *Image retrieved from https://mri.byu.edu/MRI_Training/FMRI.php*

CLINICAL OUTCOMES OUTLINES.indd 18 16/01/2018 7:11 PM

Dr. Dominguez cracks a smile with one of her patients as she explains to him his treatment strategy against MCI. The INDAK (Improving Neurorecognition with Dance and Kinesthetics) program was designed for patients with MCI, or Mild Cognitive Impairment, now considered a prelude to Alzheimer's disease.

CLINICAL OUTCOMES OUTLINES.indd 19 16/01/2018 7:11 PM

With the popularity and accessibility of ballroom dancing as a recreational exercise for the elderly, a study was conducted to determine its positive effects on memory, language, thinking, and judgment.

Recently launched by the Memory Center of St. Luke's Medical Center–Global City was a structured ballroom dance program that helps patients improve memory and other brain functions. Entitled INDAK (Improving Neurocognition with Dance and Kinesthetics), the program provides a hospital-based, non-pharmacologic intervention to improve cognition among patients with memory impairment. Aside from being cognitively stimulating and socially engaging, the program also helps improve one's cardiovascular fitness.

According to the World Health Organizaton, older adults should engage in at least 150 minutes of moderate to vigorous physical activity every week. Through INDAK, patients will be taught different ballroom dances such as cha-cha, reggae, swing, tango, samba, and merengue by experienced dance teachers who have strong backgrounds in professional dance and kinesthetics. Compared to the usual dance classes in gyms and dance clubs, INDAK fuses cognitive drills wherein visualization, imagery, memorization, and improvisation are incorporated.

DANCING VS. MEMORY LOSS

Specifically, this study explored whether ballroom dancing could delay, or even reverse, the progression of memory loss, or mild cognitive impairment (MCI), resulting from decline of nerve functions.

Zeroing in on the aspects of executive control and cognitive function, or the ability to recognize, organize, plan, and carry out a set of tasks in an efficient manner, the study involved a group of people made to do ballroom dancing at regular intervals, observed over a long period, and tested for results. This observational prospective cohort study enrolled elderly with MCI in Marikina.

One hundred eighty-two (182) elderly (>60 years) with MCI were invited to participate. Memory measures were taken at baseline and after 12 months using eight neuropsychological tests—the Filipino versions of the Montreal Cognitive Assessment (MoCA-P) and the Mini Mental State Examination (MMSE-P), Alzheimer's Disease Assessment Scale-Cognitive Subscale (ADAS-Cog), Geriatric Depression Scale (GDS), Neuropsychiatric Inventory (NPI), Disability Assessment for Dementia (DAD), Physical Self-Maintenance Scale (PSMS), and Instrumental Activities of Daily Living (IADL).

Eighty-one (81) joined the INDAK program, taught and supervised by a dance teacher for an hour twice weekly for one year. One hundred one (101) opted not to join the intervention.

RESULTS

More than 80% (*n=66*) of the dancers had compliance rates of at least 50% at post-intervention. Post-intervention scores showed a significant increase among the dancers in MoCA-P; four of MoCA-P's subscales, i.e. executive, naming, abstraction, and delayed recall; MMSE-P; and MMSE's language category.

Most notable are the results from ADAS post-intervention. ADAS-COG scores of dancers and controls were equivalent at baseline. However, dancers had a 2-point decrease after intervention (decrease indicates improvement), while controls had a 1.5 point increase in their scores (indicates worsening). With regard to depression, there was significant decrease in average scores among dancers in the Geriatric Depression Scales (GDS). Eight (8) subjects who were mildly depressed at baseline became normal at post-intervention and one subject who was very depressed at baseline became mildly depressed at post-intervention. There were nine subjects who were normal at baseline who became mildly depressed at post-intervention. However, 53 who were not depressed remained with their normal GDS scores at the end of the study indicating that dance may prevent the emergence of depression.

CONCLUSION

This study has shown that significant improvement may be observed on the elderly patients' executive control, overall cognitive function, and mood after 12 months of INDAK. This program is a beneficial non-pharmacological intervention for elderly with mild memory impairment. These benefits are possibly due to enhanced network connectivity.

CLINICAL OUTCOMES OUTLINES.indd 20 16/01/2018 7:12 PM

Dr. Jacqueline C. Dominguez, Head of the Memory Center (center) with the Memory Center team (L-R): Kerwyn C. Chan (Speech Therapist), Judy Grace L. Uy (Ancillary Nurse), Wynette Marie N. Solis (Psychologist), Julieta D. Cruz (Section Manager), Jayzel L. Mangaoang (Ancillary Nurse), and Maria Ysabel S. Costas (Speech Therapist).

PROJECT SPONSOR
Philippine Council for Health and Research Development, Department of Science and Technology (DOST)

IMPLEMENTING AGENCY
St. Luke's Institute for Neurosciences (Health and Aging Projects)

PUBLISHED
Alzheimer's Association International Conference 2016 held on July 24–28, 2016, in Toronto, Canada.

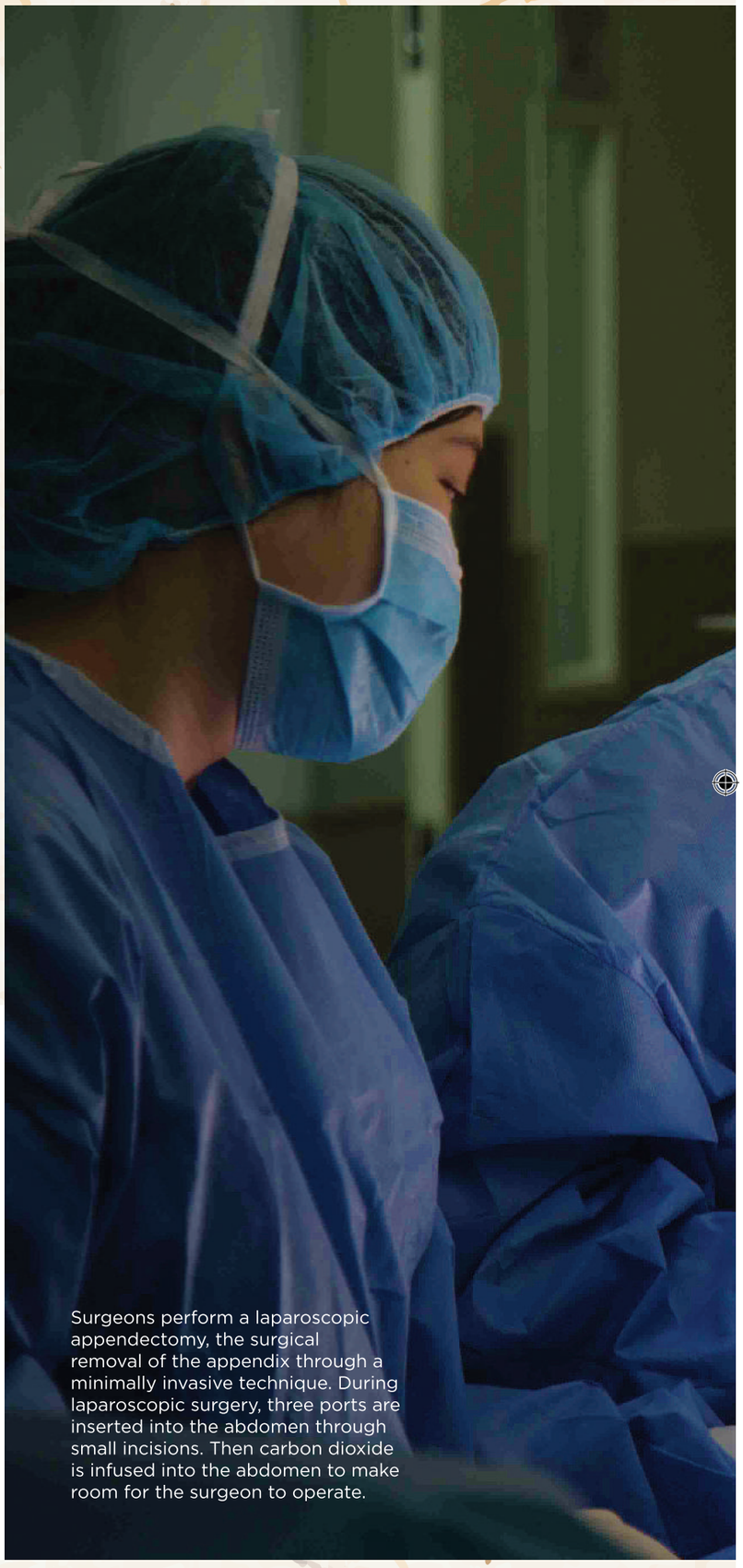
This research was approved by the St. Luke's Institutional Ethics Review Committee. EC Reference No. CT-13074

CLINICAL OUTCOMES OUTLINES.indd 21 16/01/2018 7:12 PM

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER-QUEZON CITY

EXPLORING MINIMALLY INVASIVE PROCEDURES FOR APPENDICITIS

JANUARY 2012 TO DECEMBER 2015



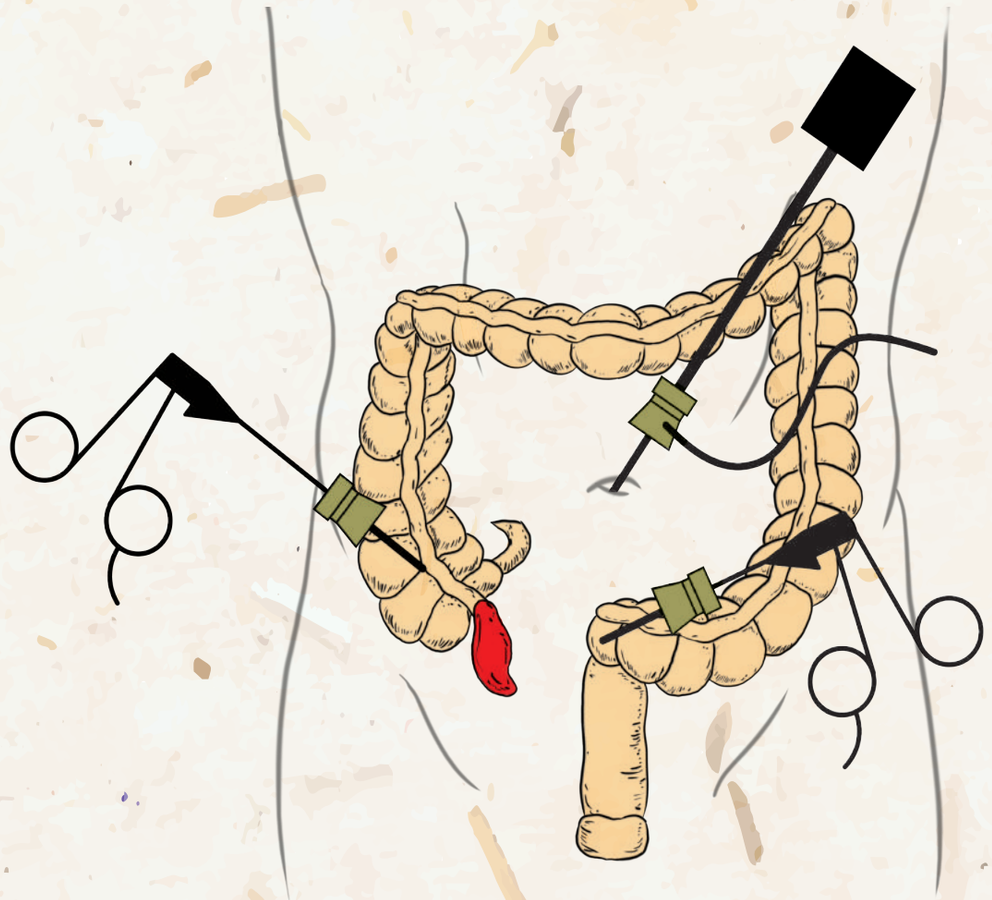
Surgeons perform a laparoscopic appendectomy, the surgical removal of the appendix through a minimally invasive technique. During laparoscopic surgery, three ports are inserted into the abdomen through small incisions. Then carbon dioxide is infused into the abdomen to make room for the surgeon to operate.

Appendicitis is a condition in which the appendix, a tubular appendage of the large intestine, becomes inflamed. In many cases this inflammation may be associated with infection. Many cases of appendicitis involve urgent surgery to avoid the spread of infection and rupture of the appendix into the abdomen. Appendectomy is the surgical removal of the appendix, and it remains one of the most commonly performed abdominal procedures.

Appendectomy may be performed as an open procedure or as a laparoscopic procedure. Open appendectomy is the traditional surgical approach, involving a small incision in the right lower abdominal wall. Alternatively, the surgeon may perform a laparoscopic appendectomy; requiring three small incisions (0.5cm to 1cm), into which the surgeon introduces a camera and surgical instruments into the abdomen to

CLINICAL OUTCOMES OUTLINES.indd 22 16/01/2018 7:12 PM

CLINICAL OUTCOMES OUTLINES.indd 23 16/01/2018 7:12 PM



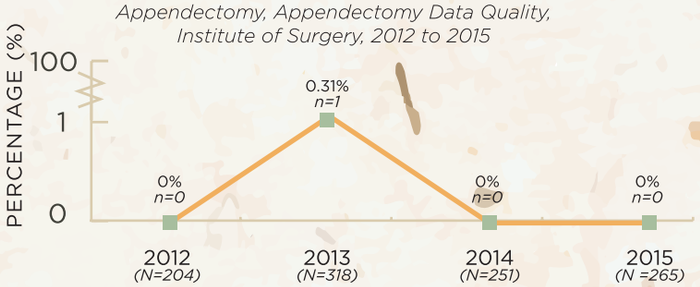
LAPAROSCOPIC TROCAR PLACEMENT FOR APPENDECTOMY

FIGURE 1

A typical placement for access ports is shown at the umbilicus, right lower quadrant, and suprapubic.

FIGURE 2

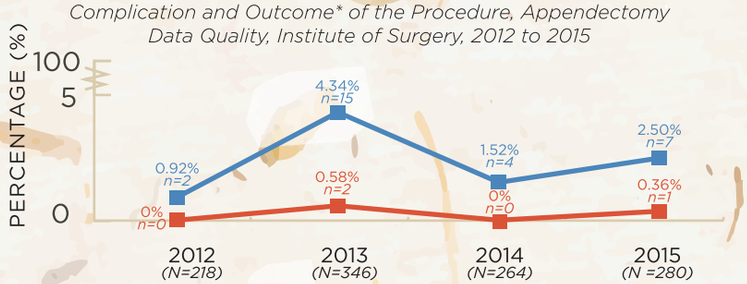
Conversion Rate from Laparoscopic to Open Appendectomy, Appendectomy Data Quality, Institute of Surgery, 2012 to 2015



Total Conversion Rate: 0.1% (n=1)

FIGURE 3

Percentage Distribution According to Presence of Complication and Outcome of the Procedure, Appendectomy Data Quality, Institute of Surgery, 2012 to 2015*



**Outcome of the procedure, either transferred to other hospital, expired or discharge*

CLINICAL OUTCOMES OUTLINES.indd 24 16/01/2018 7:12 PM

Dr. Ma. Amornetta Jovita P. Jordan-Casupang, Surgeon

remove the appendix. Because of the smaller surgical incisions, the approach is called "minimally invasive." Laparoscopic appendectomy is associated with decreased risk of wound infection and post-operative pain, shorter hospital stay, and more rapid return to daily activities compared to open appendectomy[1].

Because of the incidence of acute appendicitis, appendectomy is one of the most common procedures performed by the Institute of Surgery. The Institute monitors patient outcomes related to patient comfort, satisfaction, and post-operative complications. To assist the healthcare team in rendering patient care before, during, and after surgery, the Institute uses a Data Quality Management (DQM) form. The form serves as a checklist, a guide, and a data-collection form for tracking of patient data. Parameters such as timely assessment, appropriate administration of antibiotics, and checking of patient's pain control are monitored.

Data has been collected from 1,108 appendectomies performed by the Institute of Surgery from 2012 to 2015. Among them, only one was noted to have been converted from laparoscopic to open surgery.

For the years 2012-2015, only 2.53% of patients were noted to have complications such as the development of intra-abdominal abscess or pelvic abscess, tear of the serosa or the outermost layer of the adjacent bowels, ileus or a slow return of bowel function after surgery, or obstruction secondary to bowel adhesions. Very rarely, respiratory distress and pulmonary embolism were encountered. Our complication rate of appendectomy is noted to be at par with international benchmarks of patient safety.

REFERENCE

1 Sauerland, Stefan, Thomas Jaschinski, and Edmund AM Neugebauer. "Laparoscopic versus open surgery for suspected appendicitis." *The Cochrane Library* (2010).

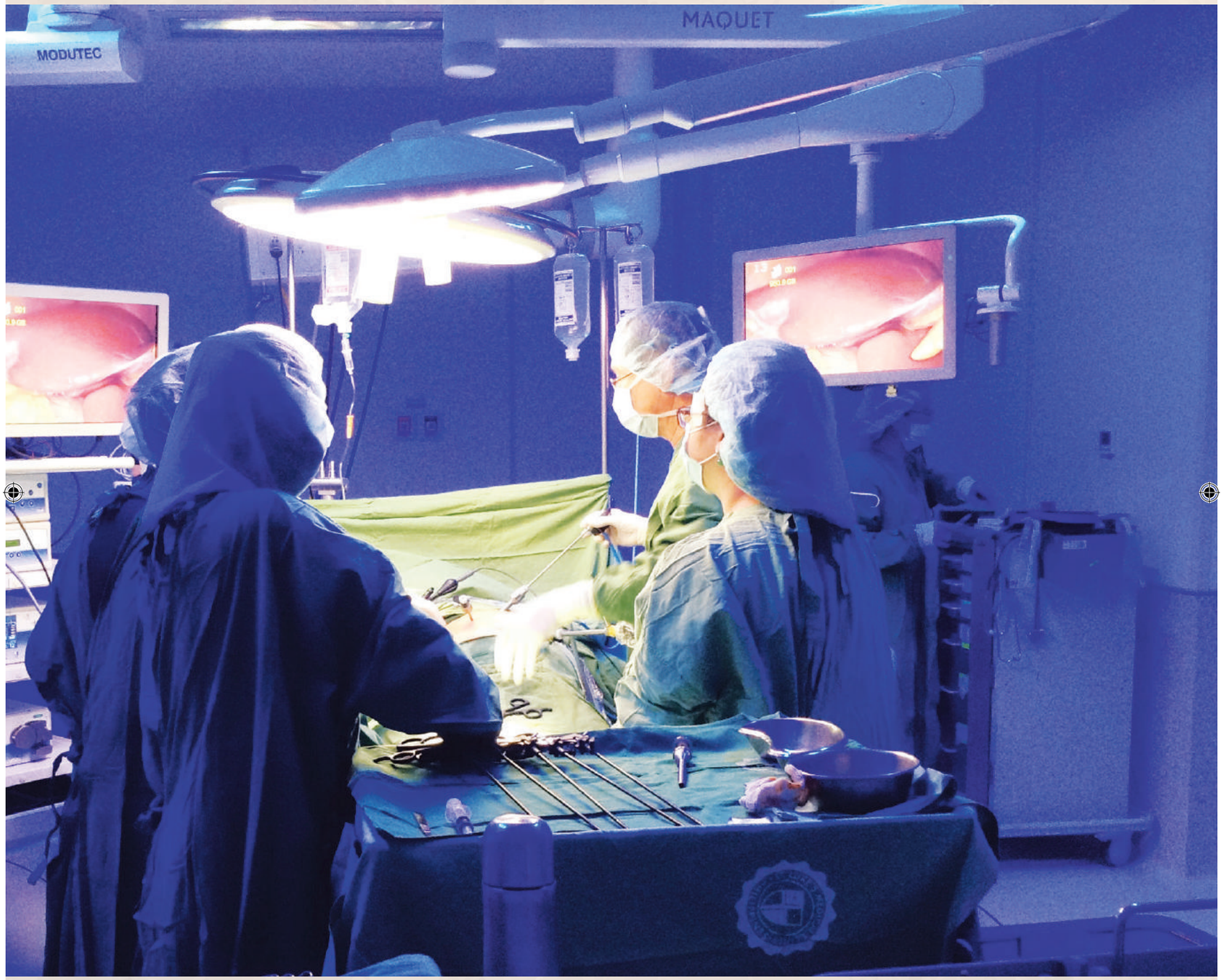
CLINICAL OUTCOMES OUTLINES.indd 25 16/01/2018 7:12 PM

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

MANAGING RISKS IN LAPAROSCOPIC CHOLECYSTECTOMY

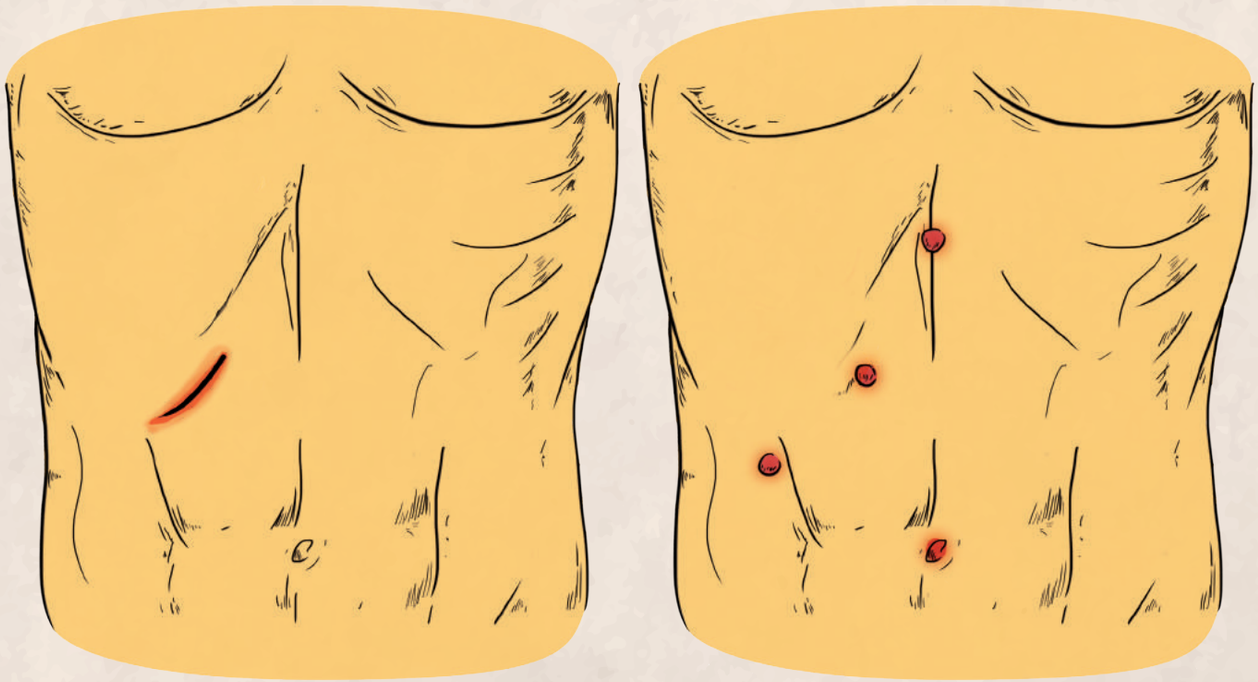
JANUARY 2012 TO DECEMBER 2015

CLINICAL OUTCOMES OUTLINES.indd 26 16/01/2018 7:12 PM



The OR team during the laparoscopic surgery.

CLINICAL OUTCOMES OUTLINES.indd 27 16/01/2018 7:13 PM



INCISION FOR OPEN CHOLECYSTECTOMY

INCISIONS FOR LAPAROSCOPIC CHOLECYSTECTOMY

FIGURE 1

A comparison between open cholecystectomy and laparoscopic cholecystectomy.

Cholecystectomy is a common surgical procedure done to remove the gallbladder, a pear-shaped organ in the abdomen that collects and stores the digestive fluid called bile. A cholecystectomy may be required if gallstones form within the gallbladder and cause pain, infection, or obstruction to the flow of bile.

The surgeon may remove the gallbladder via a single incision on the right abdomen below the rib cage. Alternatively, the procedure may be done via a laparoscopic (minimally invasive) approach, where a camera and specialized instruments are placed into small incisions (0.5 cm to 1 cm) in the abdomen to remove the gallbladder. In a number of large studies, it has been demonstrated that laparoscopic cholecystectomy is associated with favorable outcomes in terms of post-operative recovery. However, such data needs to be monitored to identify target areas for improvement.

Dr. Menandro V. Siozon, head of the Institute of Surgery, St. Luke's Medical Center–Quezon City since 2003.

CLINICAL OUTCOMES OUTLINES.indd 28 16/01/2018 7:13 PM

Inside an operating suite, St. Luke's Medical Center–Quezon City: (L-R) Dr. Jose Ma. Chiong, Dr. Victor Gozali, Dr. Menandro Siozon, Dr. Ma. Amornetta Jordan-Casupang, and Dr. Jeffrey Domino.

FIGURE 2

Conversion Rate from Laparoscopic to Open Cholecystectomy, Cholecystectomy Data Quality, Institute of Surgery, 2012 to 2015

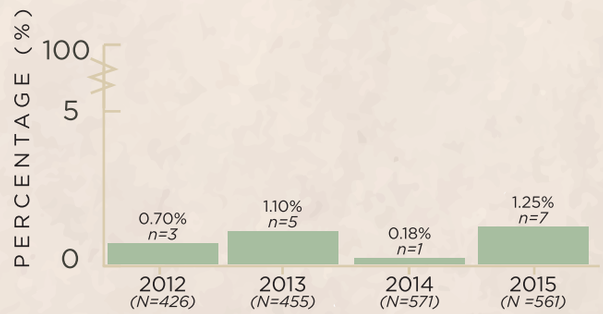
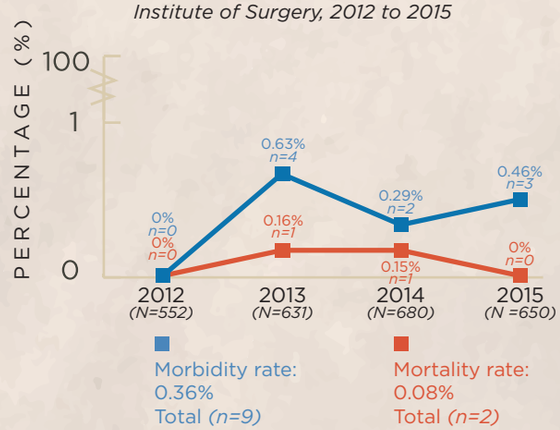


FIGURE 3

Percentage Distribution According to Presence of Complication and Outcome of the Procedure, Cholecystectomy Data Quality, Institute of Surgery, 2012 to 2015



St. Luke's Institute of Surgery monitors various measures in pursuit of patient safety. By using the Cholecystectomy Data Quality Management (DQM) form, it helps the team to care for the patient inside and outside of the operating room and allows the Health Services Outcomes Research (HSOR) team to track patient data. We are thus able to conclude that based on the 2,513 cholecystectomies performed from the year 2012 to 2015, the Institute's conversion rate from laparoscopic cholecystectomy (0.79%) and complication rate (0.36%) are at par with international benchmarks. Patient morbidities are low and the few instances of severe complications occurred in patients who had other concurrent diseases.

CLINICAL OUTCOMES OUTLINES.indd 29 16/01/2018 7:13 PM

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

MONITORING THYROIDECTOMY OUTCOMES

JANUARY 2012 TO DECEMBER 2015

CLINICAL OUTCOMES OUTLINES.indd 30 16/01/2018 7:13 PM

Surgeons perform thyroidectomy—the removal of the thyroid gland.

CLINICAL OUTCOMES OUTLINES.indd 31 18/01/2018 7:13 PM

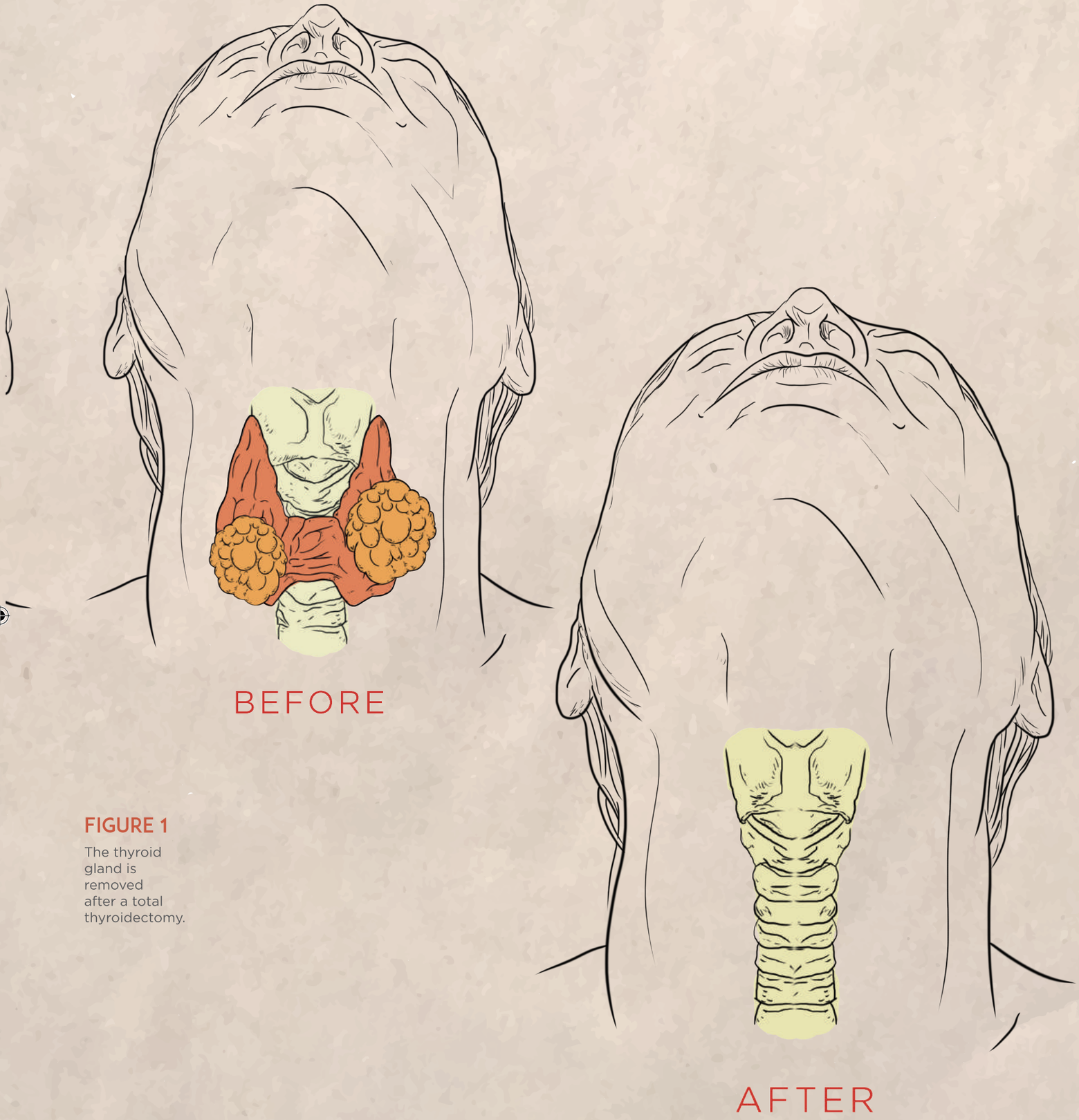


FIGURE 1

The thyroid gland is removed after a total thyroidectomy.

CLINICAL OUTCOMES OUTLINES.indd 32 16/01/2018 7:14 PM

Dr. Jeffrey J.P. Domino, Head of St. Luke's Medical Center's Minimally Invasive and Robotic Surgery Center (MIRSC) from 2015 to present.

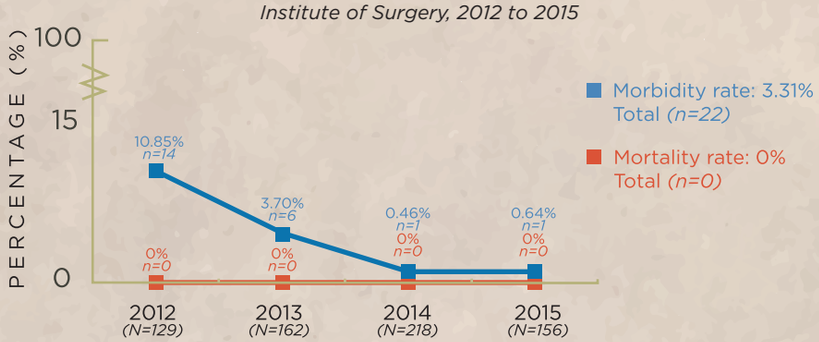
The thyroid, a butterfly-shaped gland located at the base of the neck, produces hormones that regulate many aspects of a person's metabolism. Thyroid disorders can range from benign to malignant, and from those that involve over- or under-production of thyroid hormones. A "total" thyroidectomy is performed to remove all of the thyroid gland, and a "subtotal" thyroidectomy is performed to remove part of the thyroid gland.

Thyroidectomy is the most common head-and-neck surgical procedure performed by the Institute of Surgery. Hence, outcomes of patient safety are being carefully monitored by utilizing the Thyroidectomy Data Quality Management (DQM) forms. In coordination with the Health Services Outcomes Research (HSOR) team, data is tracked to monitor outcomes and complication rate.

A total of 665 patients underwent thyroidectomy from 2012 to 2015. A low morbidity rate of 3.31% was recorded. Complications reported include hoarseness, difficulty of breathing, decreased blood levels of calcium, bleeding, formation of blood clots/hematoma, and subcutaneous emphysema (trapped pockets of air beneath the skin). No deaths were reported and all patients were discharged unremarkably.

FIGURE 2

Percentage Distribution According to Presence of Complication and Outcome of the Procedure, Thyroidectomy Data Quality, Institute of Surgery, 2012 to 2015

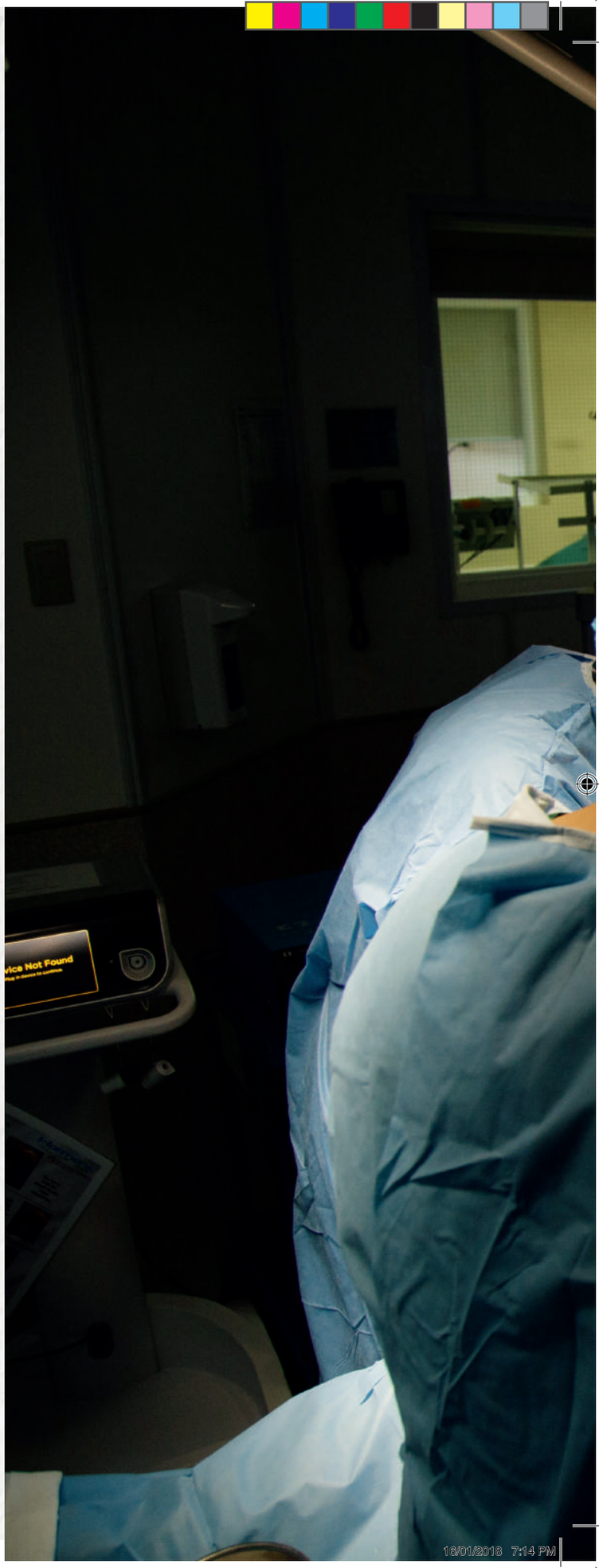


CLINICAL OUTCOMES OUTLINES.indd 33 16/01/2018 7:14 PM

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

YIELDING THE BEST PRACTICES IN INGUINAL HERNIA REPAIR

JANUARY 2012 TO DECEMBER 2015



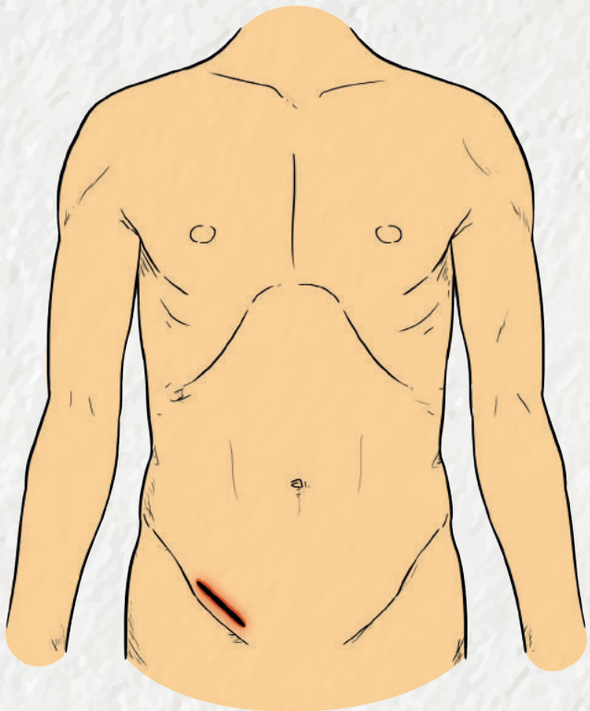
CLINICAL OUTCOMES OUTLINES.indd 34

Surgeons perform single-incision laparoscopic inguinal hernia repair.

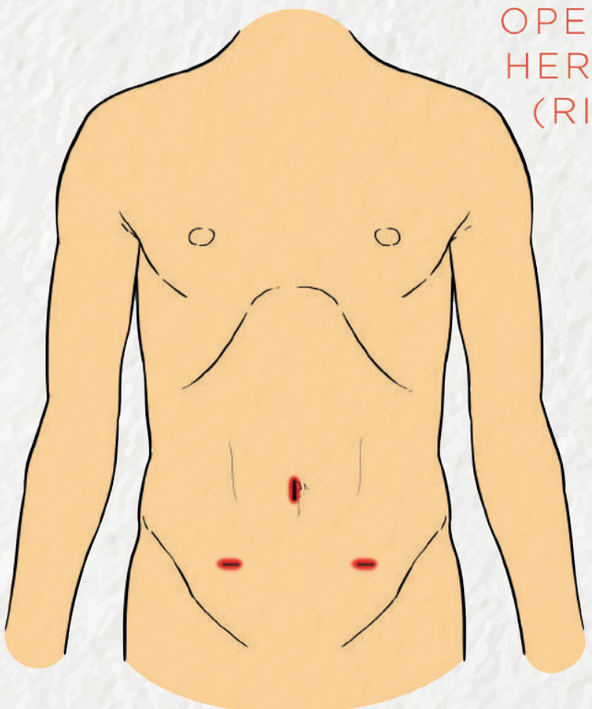
CLINICAL OUTCOMES OUTLINES.indd 35 18/01/2018 7:14 PM

FIGURE 1

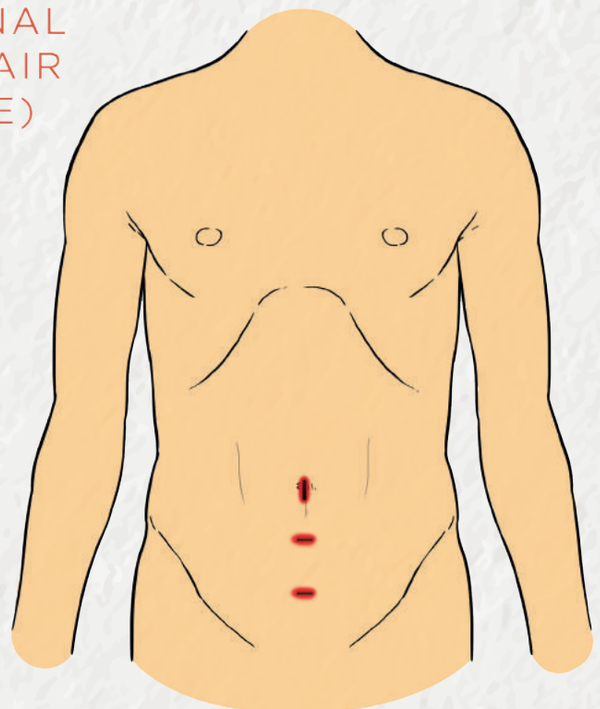
A comparison of incisions for open inguinal hernia repair vs. laparascopic approach (TAPP vs. TEP).



INCISION FOR OPEN INGUINAL HERNIA REPAIR (RIGHT SIDE)



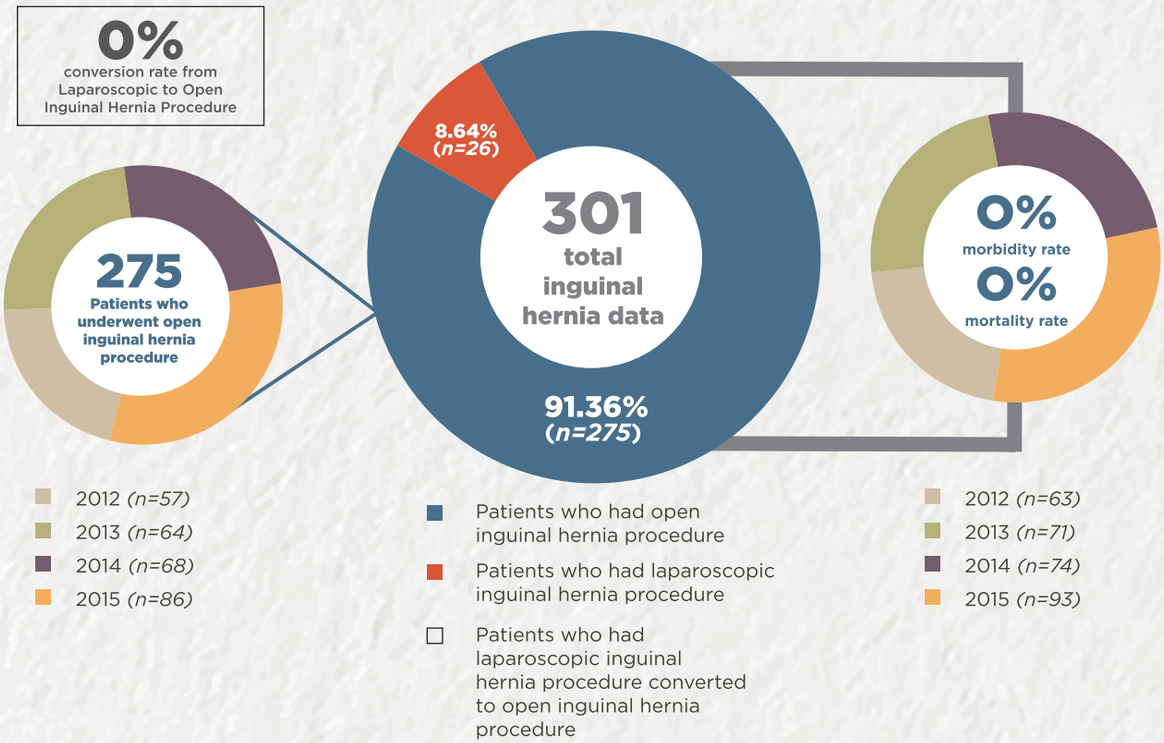
LAPAROSCOPIC INCISION FOR TRANSABDOMINAL PREPERITONEAL (TAPP) REPAIR



LAPAROSCOPIC INCISION FOR TOTALLY EXTRAPERITONEAL (TEP) REPAIR

CLINICAL OUTCOMES OUTLINES.indd 36 16/01/2018 7:14 PM

FIGURE 2 *Conversion Rate from Laparoscopic to Open Inguinal Hernia Procedure and Percentage Distribution According to Presence of Complication and Outcome of the Procedure, Inguinal Hernia Data Quality, Institute of Surgery, 2012 to 2015*



Dr. Martin Anthony A. Villa, head of the Quality Management Team of the Institute of Surgery, St. Luke's–Quezon City since 2015.

An inguinal hernia occurs when an internal organ or fat is pushed through a defect or a weak spot in the inguinal floor/groin. Repair of inguinal hernias is a common surgical procedure, with a variety of options for surgical techniques and approaches. While it is a common and relatively safe operation, a small risk of possible complication and recurrences still exist.

The St. Luke's Institute of Surgery monitors data in order to track measures in patient safety. With adherence to guidelines, the Institute uses the Hernia Data Quality Management (DQM) as a guide, checklist, and data-collection form for each patient undergoing inguinal hernia repair. In cooperation with the Health Services Outcomes Research (HSOR) team, the Institute is able to track the complications and recurrences of hernia repair.

From 2012 to 2015, a total of 301 inguinal hernia repairs were performed; 275 were performed via open/traditional approach while 26 were performed via laparoscopic (minimally invasive) approach. Among the hernia repair done via the laparoscopic approach, there is no conversion to open surgery. No recurrences, morbidities, or mortalities were reported showing that the Institute is able to demonstrate a high standard of patient safety and care before, during and after surgery.

CLINICAL OUTCOMES OUTLINES.indd 37 16/01/2018 7:15 PM

Dr. Maria Cecilia M. Pagdanganan, head of the St. Luke's Medical Center–Quezon City Breast Center since 2012.

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

OUTCOMES OF PATIENTS WHO UNDERWENT BREAST CANCER SURGERY

JANUARY 2012 TO DECEMBER 2015

CLINICAL OUTCOMES OUTLINES.indd 38 16/01/2018 7:15 PM

A patient assisted by a nurse undergoing a mammogram.

A radiology technician reviewing a mammogram image.

CLINICAL OUTCOMES OUTLINES.indd 39 16/01/2018 7:15 PM

BREAST CANCER

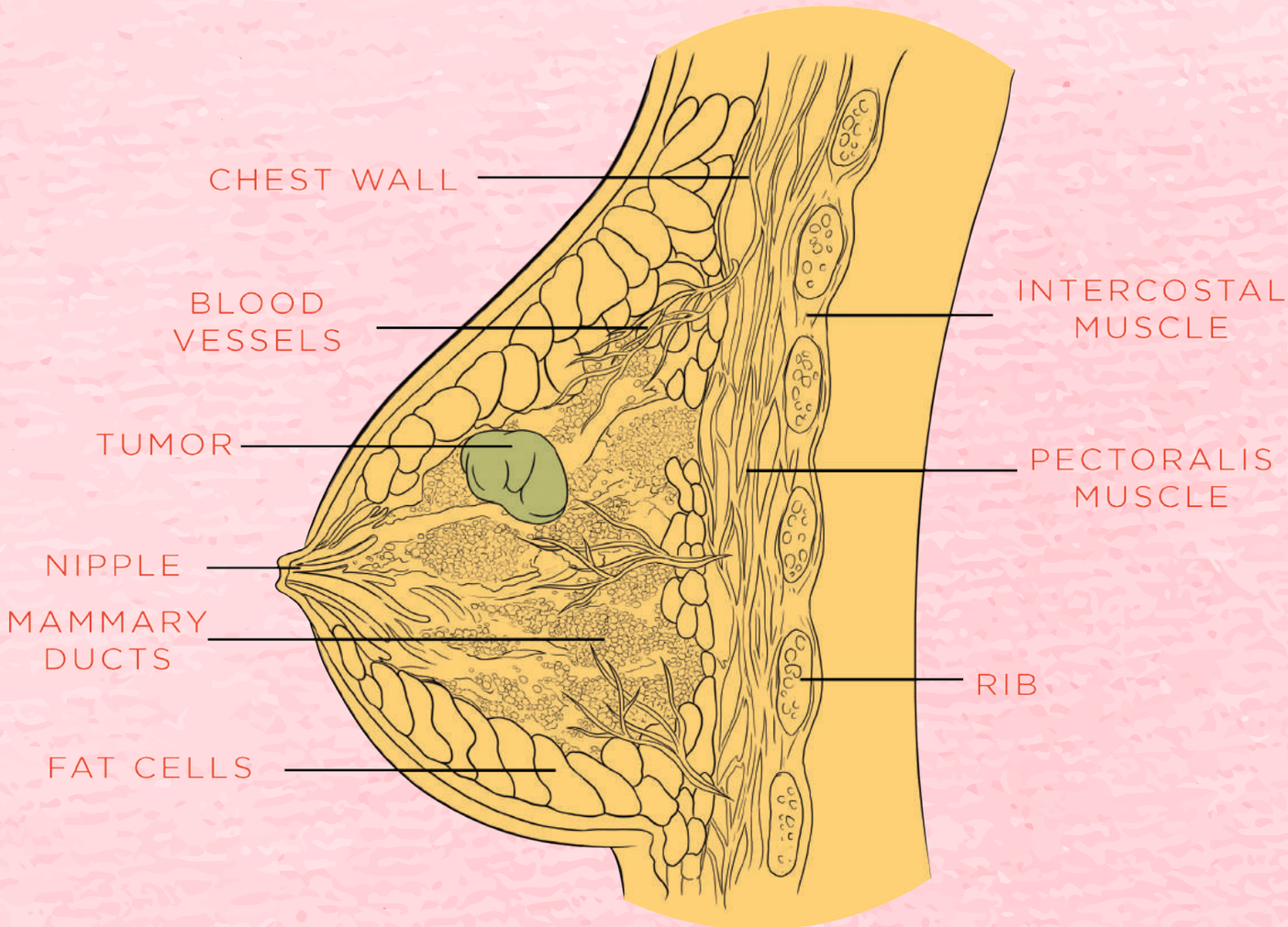
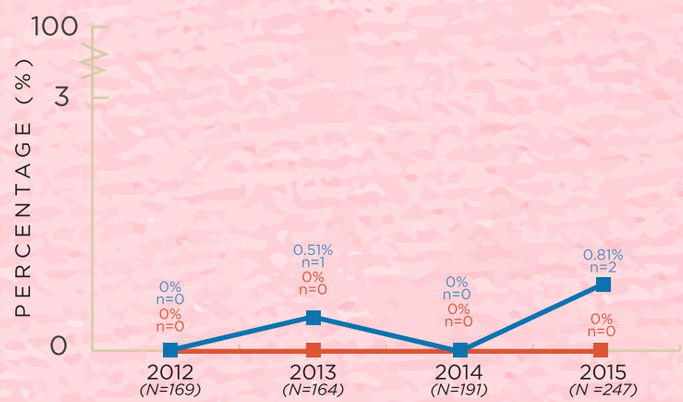


FIGURE 1
Cross-section anatomy of the breast showing the formation of a tumor.

FIGURE 2

Percentage Distribution According to Presence of Complication and Outcome of the Procedure, Breast Cancer Data Quality, Institute of Surgery, 2012 to 2015



CLINICAL OUTCOMES OUTLINES.indd 40 16/01/2018 7:15 PM

Dr. Victor K. Gozali, MD, FPCS, FACS, former Head of the Institute of Surgery Quality Management Team from 2003 to 2014.

The radiologist and breast surgeon examining 3D mammogram images of a patient's breast. These images help the doctors identify abnormalities in the breasts such as masses, which could indicate cancer.

Breast cancer is the most common cancer affecting women worldwide, with an incidence of 25% (WHO, 2017). Rarely, it may occur in men. Effective methods now exist for detecting breast cancer at its early stages. Improved treatment practices, both surgical and nonsurgical, have improved patient survival. Depending on the type and stage of breast cancer, a mastectomy (removal of breast tissue), with or without removal of axillary (armpit) lymph nodes, may be performed.

The St. Luke's Institute of Surgery aims to treat patients in accordance to updated, evidence-based guidelines and to monitor patient safety outcomes. The Breast Cancer Data Quality Management (DQM) forms allow monitoring of clinical outcomes and keep track of the complication rate. The Institute works in cooperation with Health Services Outcomes Research (HSOR) team to check that timely assessment, patient comfort and safety, and timely discharge are prioritized.

From 2012 to 2015, a total of 771 patients underwent mastectomy or modified radical mastectomy. Among these, only three developed complications, including hematoma (formation of blood clots). All of these patients were eventually discharged, with no patient transferred to other hospitals. There was no mortality reported, demonstrating that we are at par with the benchmark of patient safety for surgically managed breast cancer patients.

CLINICAL OUTCOMES OUTLINES.indd 41 16/01/2018 7:15 PM

PEDIATRIC BLOOD DISORDERS AND TUMOR UNIT
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

OUTCOME OF PEDIATRIC PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

JANUARY 2011 TO JULY 2015

Cancer in children and adolescents is rare. Among children, though, the overall incidence of cancer, including Acute Lymphoblastic Leukemia (ALL), has been slowly increasing since 1975[1].

ALL is the most common type of cancer in children[1]. It makes the bone marrow produce too many immature lymphocytes (a type of white blood cell), and thus may affect the red blood cells, white blood cells, and platelets.

In the past, a diagnosis of ALL in children is a death sentence. Thus, our Pediatric Blood Disorders and Tumor Unit at St. Luke's Medical Center–Quezon City focused its efforts on improving the diagnosis, treatment, curability, and survival of our pediatric patients with ALL.

Internationally, data from Dana Farber Institute, St. Jude Children's Research Hospital and Berlin Frankfurt Munster Consortium Hospitals in Europe, among others, showed the overall survival rate in the late 1960s to early 1970s was very poor at only 5–8%. But with the development of new diagnostics and treatment strategies, the overall survival and curability rate in the early 2000s improved dramatically to as high as 85%.

As such, mortality decreased by more than 50%[1,2]. The 5-year survival rate has also increased over that period from 60% to around 90% for children younger than 15 years old and from 28% to about 70% for adolescents aged 15 to 19.

PATIENTS ONLY GET THE BEST

Being in a developing country, though, is not an excuse not to give the best medical treatment to children with leukemia. We do a thorough history and physical examination, having comprehensive diagnostics for accurate diagnosis and risk stratification for proper treatment, such as complete blood count (CBC), blood chemistries, bone marrow aspiration for cell morphology, cytochemistry, and flow cytometry, generally entailing blood sampling for cell analysis conducted microscopically. The process includes complete leukemia panel and minimal residual disease, cytogenetics, and fluorescence in situ hybridization (FISH) panels essentially involving evaluation of hereditary predisposition to leukemia through biopsy or microscopic analysis of a patient's chromosomes.

From January 2011 to July 2015, a total of thirty-nine pediatric patients had ALL. Twenty-five of them were classified as Standard Risk and 14 as High Risk.

All patients received a hybrid chemotherapy of the Berlin-Frankfurt-Munster (BFM) and Low Income Chemotherapy (LIC) treatment protocol, or treatments involving intake of chemicals and drugs.

CLINICAL OUTCOMES OUTLINES.indd 42 16/01/2018 7:16 PM

The Pediatric Blood Disorders and Tumor Unit: Dr. Allan Racho (seated) with (L-R) Dr. Genaro Bermudez, Dr. Loralyn Mae Lagaya-Arañas, and Dr. Maria Luz Del Rosario.

CLINICAL OUTCOMES OUTLINES.indd 43 16/01/2018 7:16 PM

BLOOD CELLS

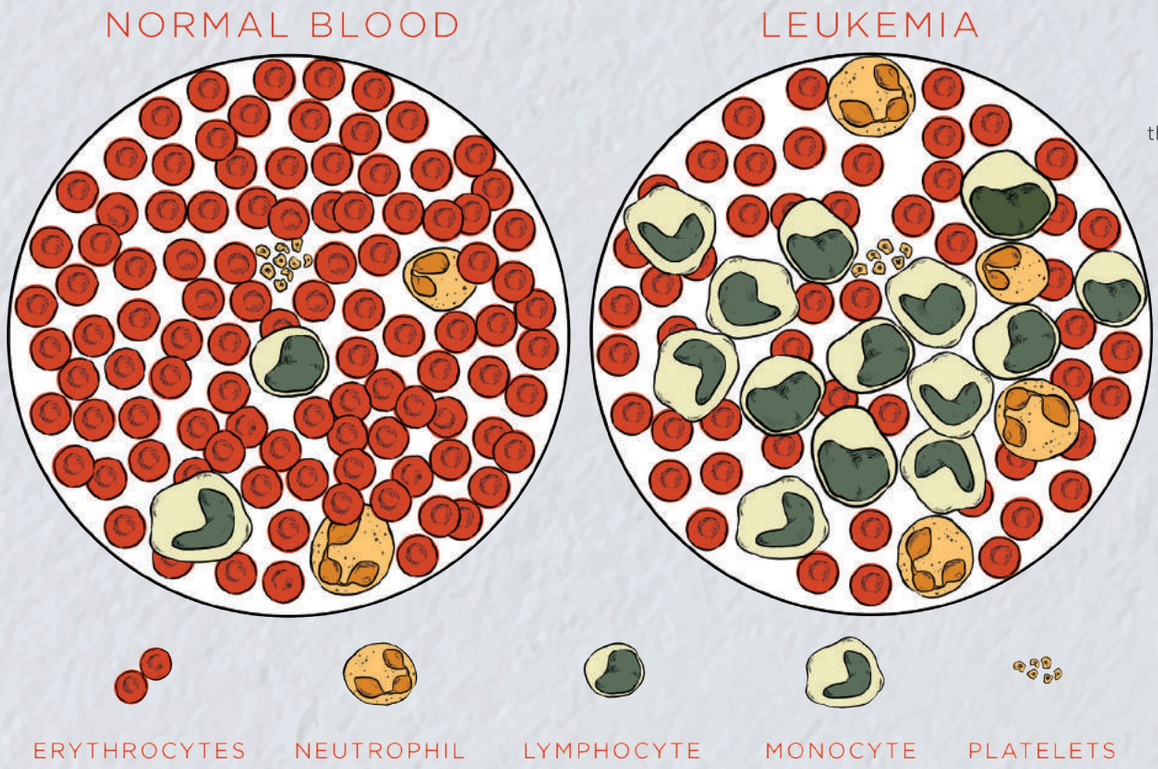


FIGURE 1

The rise in number of leukocytes is evident in the blood cell affected by leukemia.

IN LINE WITH GLOBAL STANDARDS

The National Cancer Institute has come up with a widely used international risk classification for pediatric patients with ALL, using correlated data from the Children's Cancer Group, Pediatric Oncology Group, Dana Farber Cancer Institute, St. Jude Children's Research Hospital, and other American and European cooperative study groups. This classification is what we use on our patients.

An event is considered in case of failure of induction, relapse, transfer to another hospital, or death. In standard risk patients, we have an event-free survival rate of 89% compared with the high-risk patients' 66%. In the standard risk classification, two patients had to migrate to other countries, and completed their chemotherapy elsewhere. Of the 14 high-risk patients, one had induction failure, two came from other hospitals and died shortly after transfer to our institution, and two transferred to other hospitals and eventually had the same fate.

We compare the overall survival rate between standard and high-risk patients. Standard risk patients have an overall survival rate of 92.9%, while the high-risk patients have a survival rate of 82.5%.

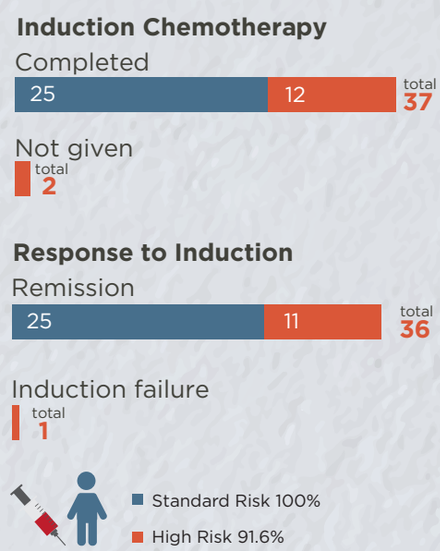
Combining the standard and high-risk patients gives us an overall survival rate of 87.7%, comparable with the international standard of 85%.

Induction chemotherapy is an important step in the treatment of pediatric ALL. Its objective is to induce them for complete remission, which means fulfilling the clinical, peripheral blood, and bone marrow parameters.

Pediatric ALL patients have a high complete remission rate and overall survival rates for both standard and high-risk classifications. Event-free as well as overall survival for both groups improved significantly to international benchmarks because of accurate diagnosis, ability to prognosticate or forecast outcomes, development of risk-related treatment protocols, and quality supportive management and team effort.

FIGURE 2

Response to Induction Chemotherapy/ Complete Remission Rate
St. Luke's Medical Center–Quezon City
January 2011 to July 2015



CLINICAL OUTCOMES OUTLINES.indd 44 16/01/2018 7:16 PM

A pediatric ALL patient's prospects of getting cured is better than adults, provided they are given the right treatment plan. The Pediatric Blood Disorders and Tumor Unit at St. Luke's–Quezon City focuses its efforts on improving the survival of pediatric patients with ALL.

REFERENCES

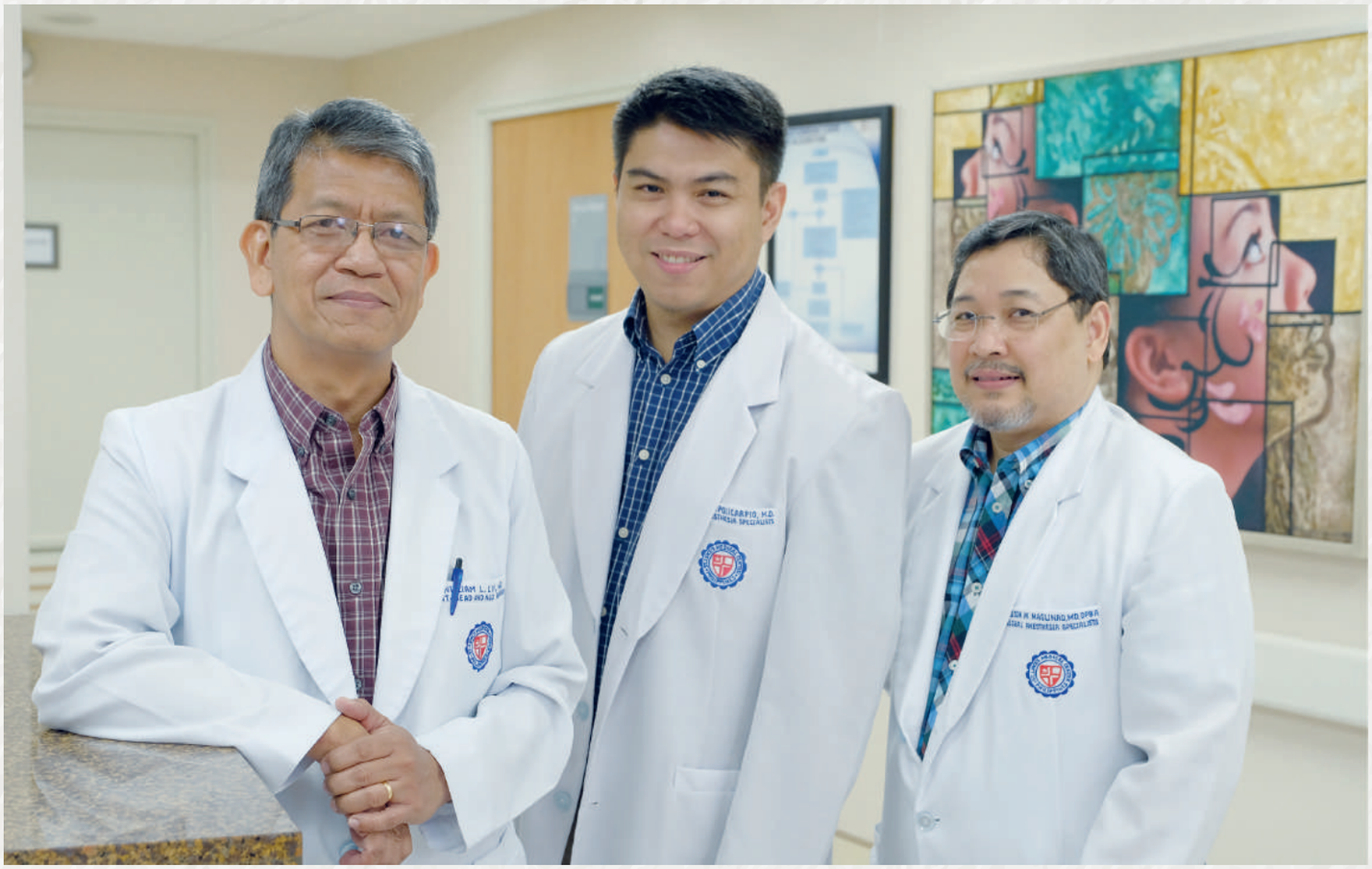
1 www.cancer.gov/cancertopics/pdq/treatment/childALL/HealthProfessional/page1

2 www.ncbi.nlm.nih.gov/pmc/articles/PMC2746889/

3 Smith M, Arthur D, et al. Uniform Approach to Risk Classification in Children with ALL. J Clin Oncol. 1989; 84: 1068-1071.

4 National Institute of Health, June 2008.

CLINICAL OUTCOMES OUTLINES.indd 45 16/01/2018 7:16 PM



(L–R): Dr. William L. Lim, Head of the Department of Otorhinolaryngology–Head and Neck Surgery at St. Luke's–Global City with his BVFI team, anesthesiologists Dr. Reuben D. Policarpio and Dr. Nelson M. Maglinao.

DEPARTMENT OF OTORHINOLARYNGOLOGY–HEAD AND NECK SURGERY
VOICE, SINUS, AND SWALLOWING CENTER
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

REGAINING THE ABILITY TO BREATHE: TREATMENT OF BILATERAL VOCAL FOLD IMMOBILITY

2010 TO 2015

The larynx is an airway conduit for breathing and voice production.

The vocal folds are in the lateral or abducted position during breathing, and in the median or adducted position during phonation. The vibration of the vocal folds gives sound for speech. Thus, when the vocal folds are in the speaking or singing position and activity, the physical act of breathing stops. This compels pauses in between speaking or singing to enable the vocal folds to return to the lateral position and allow breathing.

CLINICAL OUTCOMES OUTLINES.indd 46 16/01/2018 7:16 PM

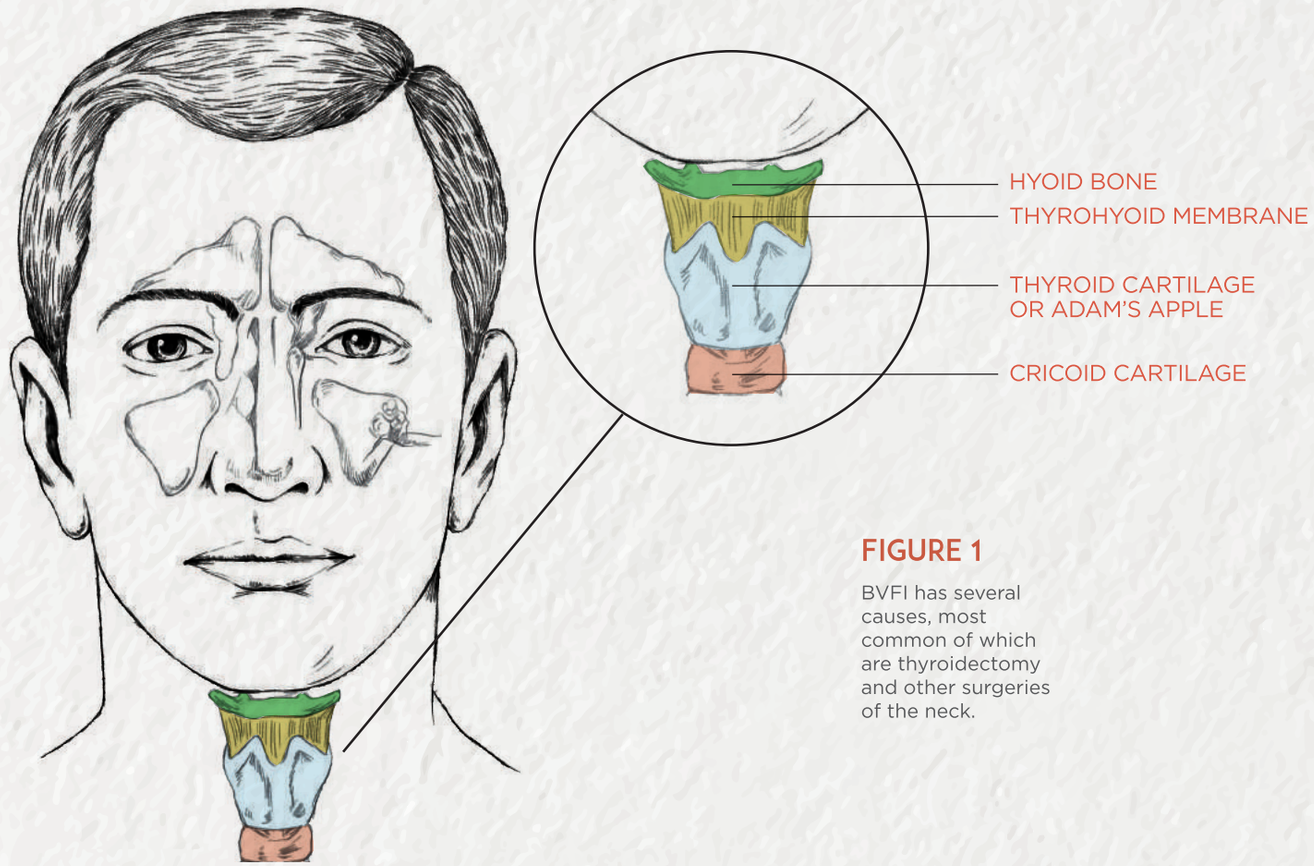


FIGURE 1

BVFI has several causes, most common of which are thyroidectomy and other surgeries of the neck.

BILATERAL VOCAL FOLD IMMOBILITY

When both vocal folds are permanently in the speaking (median or adducted) position, this is termed **Bilateral Vocal Fold Immobility** (BVFI), which causes airway obstruction. Patients with BVFI usually complain of difficulty of breathing manifested as easy fatigability, noisy breathing, loud "snoring", or asphyxiation [1,2].

BVFI has several causes, the most common of which is injury to the recurrent laryngeal nerve during thyroidectomy, or the surgical removal of the thyroid glands, and other surgeries of the neck [2,3]. Other causes are intubation, radiation therapy, tumors of the neck, neurologic conditions, and some of unknown etiology[2].

The usual treatment is tracheostomy [1], a procedure to bypass the obstruction of the airway due to the median position of the vocal folds. This entails the creation of a hole and insertion of a tube into the trachea through the neck. Tracheostomy, though a life-saving procedure, has its disadvantages. It impairs normal speech and swallowing [2]. The tracheostomy tube causes increased mucous secretion and coughing, and may necessitate frequent suctioning during the day and even during sleep. The tracheostomy site can get infected, form granulation tissues, and may bleed. The social stigma of having a tube in the neck with uncontrolled mucous secretions and coughing can be daunting. Thus, patients tend to avoid social gatherings, especially dining out.

TREATMENT

The goals in the BVFI treatment are to provide an adequate airway for breathing without tracheostomy, a minimally invasive procedure, and speech preservation. With the advancement in upper airway endoscopy and laser technology, the treatment of BVFI has become minimally invasive without the need for tracheostomy. Ossoff in 1984 published his technique of laser arytenoidectomy [5]. Kashima in 1989 published his treatment by laser posterior cordectomy [5,6].

Arytenoidectomy is the excision of an arytenoid cartilage to improve breathing. This cartilage, located on the back side of the larynx, is where the vocal folds are attached.

At present, the main option for BVFI treatment in technologically advanced medical centers abroad is a combination of endoscopic laser posterior cordotomy and arytenoidectomy [7].

With this technique, the success rate for decannulation, or removal of the tracheostomy tube when no longer needed, is 60–100% from different studies reported in Otolaryngology–Head and Neck Surgery journals.[8]

CLINICAL OUTCOMES OUTLINES.indd 47 16/01/2018 7:16 PM

Dr. William L. Lim (leftmost) and his team explain to the patient how BVFI complicates one's breathing.

RESULTS

We reviewed our results at St. Luke's Medical Center–Global City in the surgical management of BVFI using Endoscopic Laser Posterior Cordotomy with Partial Arytenoidectomy from 2010 to 2015.

Over that period, we had a total of 20 patients: three males and 17 females aged between five and 76 years. Fifteen had tracheostomy pre-operatively, while five did not.

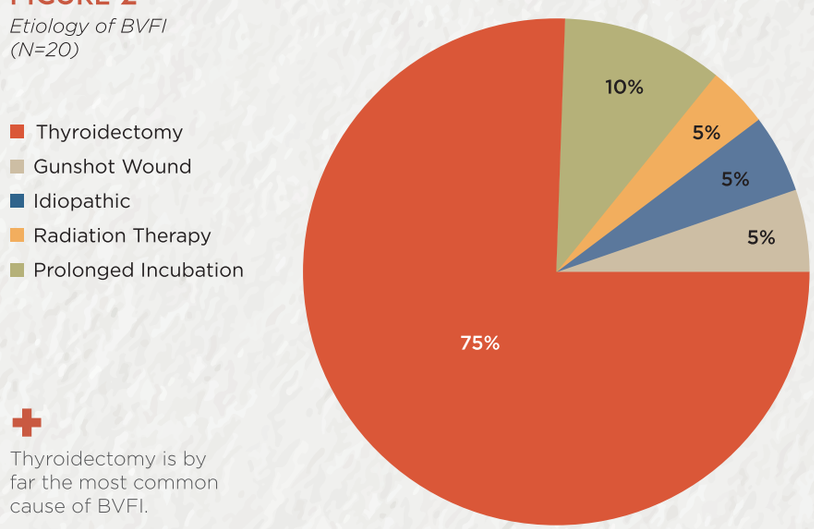
As to the cause of BVFI, 15 were from thyroidectomy, two from prolonged intubation, one from radiation therapy for laryngeal cancer, one from a gunshot wound in the neck, and another from an unknown cause.

There were four cases of granuloma formation at the surgical site postoperatively, which were managed conservatively with steroids and proton pump inhibitors. Granuloma is a collection of immune cells formed to wall off substances that the immune system perceives as foreign but cannot eliminate.

The success rate for decannulation for BVFI after Endoscopic Laser Posterior Cordotomy with Partial Arytenoidectomy is 100%. All of the patients have good serviceable voice.

FIGURE 2

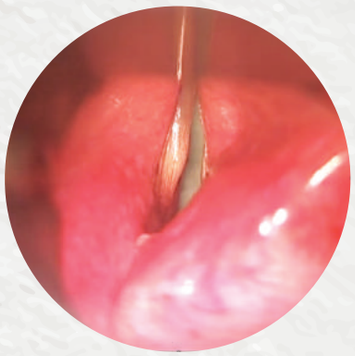
Etiology of BVFI (N=20)



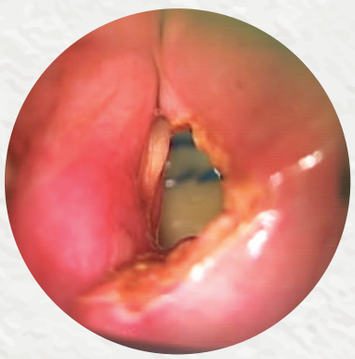
Thyroidectomy is by far the most common cause of BVFI.

CLINICAL OUTCOMES OUTLINES.indd 48 16/01/2018 7:17 PM

INTRA-OPERATIVE PHOTOS

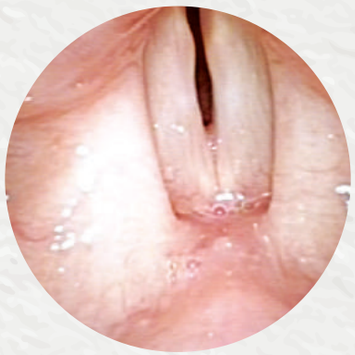


Before CO2 laser treatment



After CO2 laser treatment

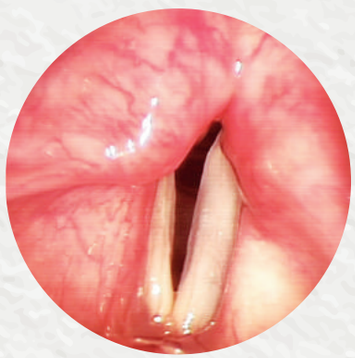
OUT-PATIENT PRE- AND POST-OPERATIVE PHOTOS



Pre-operative Glottic opening

Post-operative Glottic opening

Pre-operative Glottic opening



Post-operative Glottic opening

REFERENCES

1 Ongkasunan, J & Courey, M. The role of botulinum toxin in the management airway compromise due to bilateral vocal fold paralysis. Curr Opin Otolaryngol Head Neck Surg 2011, 19:444-448

2 Bradley, J. & Klein, A. Treatment of bilateral vocal fold immobility. Curr Otorhinolaryngol Rep 2:114-118, 2014

3 Süleyman Özdemir, MD, et al. Carbon dioxide laser endoscopic posterior cordotomy technique for bilateral abductor vocal fold paralysis: A 15-year experience. Otolaryngol Head & Neck Surg Vol 139, 401-404, Apr 2013

4 Ossoff RH, Sisson GA, Duncavage JA, Moselle HI, Andrews PE, McMillan WG. Endoscopic laser arytenoidectomy for the treatment of bilateral vocal cord paralysis. Laryngoscope. 1984;94:1293–7

5 Dennis DP, Kashima H. Carbon dioxide laser posterior cordectomy for treatment of bilateral vocal cord paralysis. Ann Otol Rhinol Laryngol. 1989;98:930–4.

6 Kashima HK. Bilateral vocal fold motion impairment: pathophysiology and management by transverse cordotomy. Ann Otol Rhinol Laryngol. 1991;100(9 Pt 1):717-21.

7 Hachiya, A., et al. Posterior cordotomy and partial arytenoidectomy for bilateral vocal fold paralysis in adduction therapy. Intl Arch Otorhinolaryngol v.11,311-316, 2007

8 Woodson, G. Arytenoid abduction for bilateral vocal fold immobility. Curr Opin Otolaryngol Head Neck Surg 19:428-433, 2011

CLINICAL OUTCOMES OUTLINES.indd 49 16/01/2018 7:17 PM

INSTITUTE OF ORTHOPEDICS AND SPORTS MEDICINE
JOINT REPLACEMENT SURGERY SERVICE
ST, LUKE'S MEDICAL CENTER–GLOBAL CITY

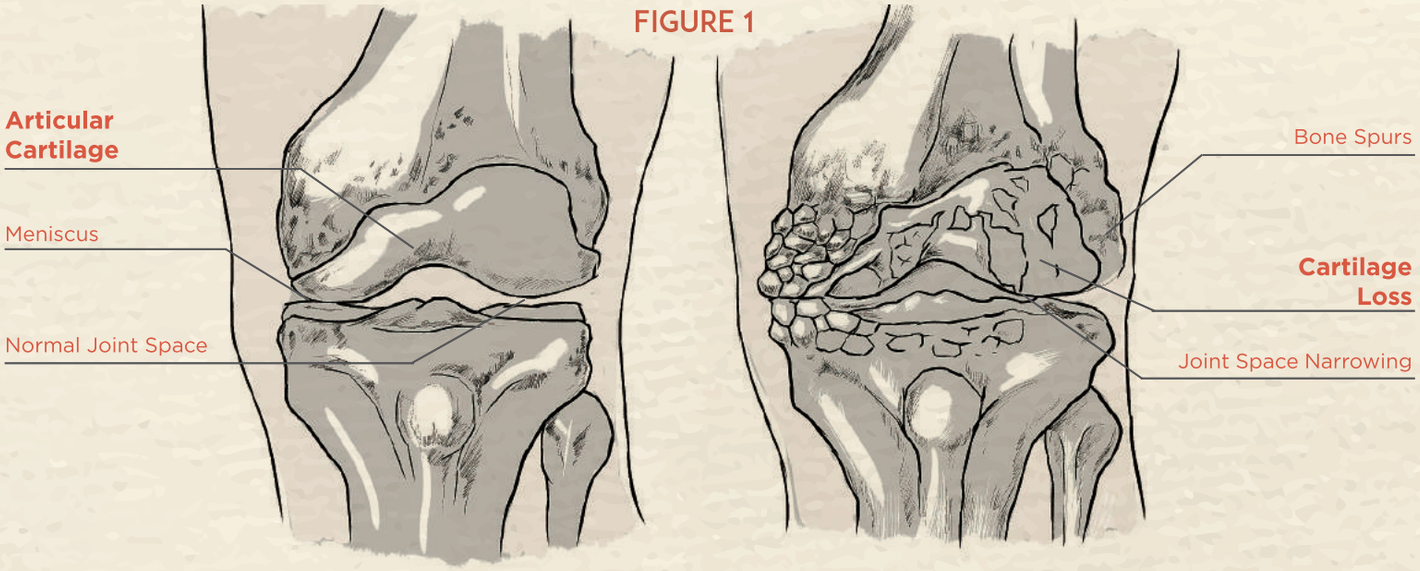
TOTAL JOINT REPLACEMENT SURGERY

JANUARY 2015 TO DECEMBER 2015

Dr. Antonio N. Tanchuling, Jr., Head of the Joint Replacement Surgery Service of St. Luke's–Global City (third from left), with the joint replacement team (from left) Dr. Raymond Alvin J. Kokseng, Jr., Dr. Rolando Angelo T. Ochoa, Dr. Joselito L. Lazaga, Dr. Edsel F. Arandia, and Dr. Andrew Gabriel J. Tabberrah.

CLINICAL OUTCOMES OUTLINES.indd 50 16/01/2018 7:17 PM

FIGURE 1



OSTEOARTHRITIS

Several million Filipinos have osteoarthritis, which mostly affects people over 45 years old. This is according to a Department of Health report based on a prevalence survey of 16 percent.

Osteoarthritis breaks down the cartilage in the joints of the hands, knees, hips, and spine, making bones rub together and cause pain, swelling, and reduced mobility. Without treatment, the damage may become permanent.

Osteoarthritis literally translates to "bone and joint pains". Degenerative osteoarthritis, the most common type of arthritis, is seen especially among older people. It is often called degenerative joint disease or "wear and tear" arthritis that occurs in any joint in the body as part of aging, and most often develops in the weight-bearing hip and knee. Osteoarthritis mostly affects cartilage, the hard but slippery tissue covering the ends of bones where they meet to form a joint. Healthy cartilage allows bones to glide over one another and absorb the shock from physical movement (Figure 1).

In osteoarthritis, the surface layer of cartilage breaks and wears away, making the bones exposed and rub together, causing pain, swelling, and loss of motion of the joint, which may lose its normal shape over time. Also, small deposits of bone—called osteophytes or bone spurs—may grow on the edges of the joint. Bits of bone or cartilage can break off and float inside the joint spaces, increasing damage, commonly to the hip and knee joints.

The most common symptom of osteoarthritis is pain, typically around the hip joint in hip osteoarthritis and around the knee joint in knee osteoarthritis due to the damage of the cartilages. Usually, the pain develops slowly and worsens over time. Pain and stiffness may be worst in the morning, or after sitting or resting for a while. The discomfort usually affects everyday activities like bending over to tie a shoe, rising from a chair, or taking a short walk.

OPTING FOR A LONG-TERM CURE

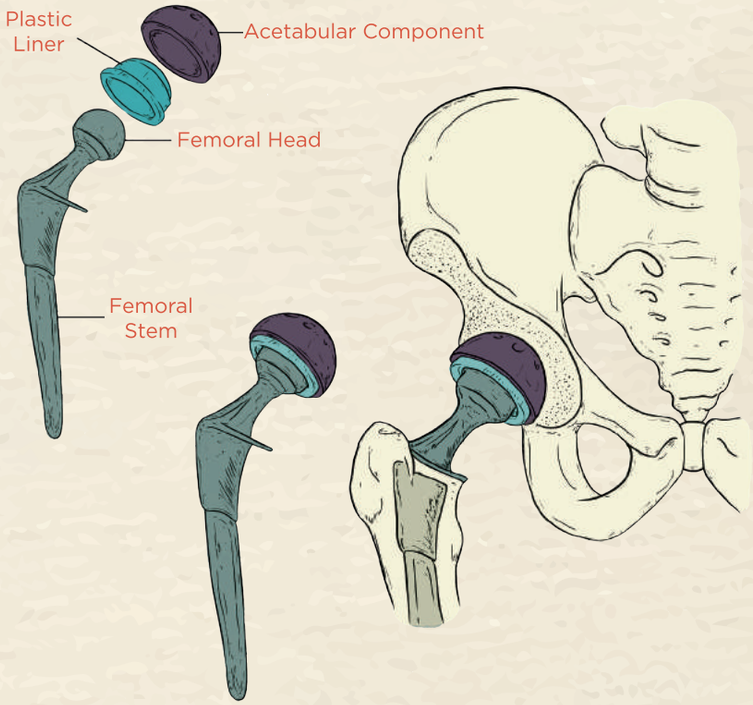
Osteoarthritis is known to develop gradually. Early treatment significantly lessens its impact on daily activities. Non-operative treatment options include activity modification, weight reduction, pain relievers, and physical therapy.

However, these forms of treatment only delay the progression of the degenerative process and will not help regain the normal function of the cartilage.

If all non-operative treatments have been exhausted, and the joint pain worsens and mobility decreases, a **Total Joint Replacement** is recommended.

CLINICAL OUTCOMES OUTLINES.indd 51 16/01/2018 7:17 PM

FIGURE 2



HOW IT WORKS

A total joint replacement is a surgical procedure whereby the diseased cartilage and the bone of the hip joint are surgically replaced with artificial materials.

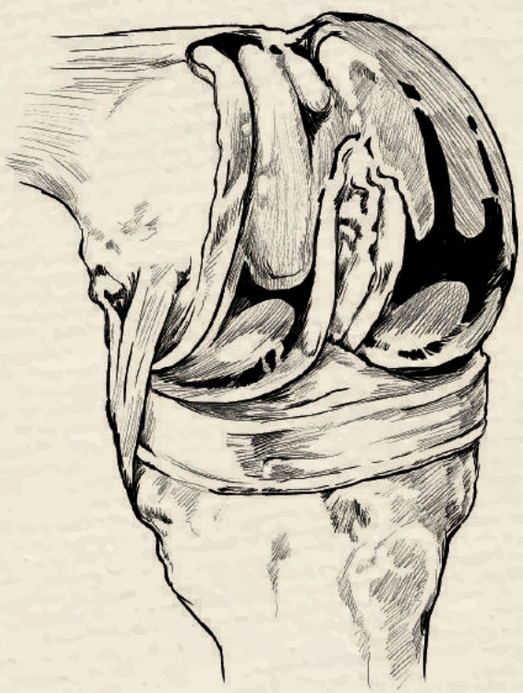
Total Hip Replacement: The normal joint is a ball-and-socket joint. The socket is a "cup-shaped" component of the pelvis called the acetabulum. The ball is the head of the thighbone (femur). Total hip joint replacement involves surgical removal of the diseased ball and socket and replacing them with a metal (or ceramic) ball and stem inserted into the femur bone and an artificial plastic (or ceramic) cup socket. The metallic artificial ball and stem are referred to as the "femoral prosthesis" and the plastic cup socket is the "acetabular prosthesis" (Figure 2).

Total Knee Replacement: This is a surgical procedure that replaces the weight-bearing surfaces of the knee joint to relieve pain and disability. It consists of replacing the diseased or damaged joint surfaces of the knee with metal and plastic components shaped to allow continued motion of the knee (Figure 3).

FIGURE 3

BEFORE KNEE REPLACEMENT

AFTER KNEE REPLACEMENT



Patients who underwent knee or hip replacement surgery at St. Luke's can usually resume normal activities after 2 weeks. The current artificial materials being used are chromium-molybdenum alloy, alumina, ceramic and polyethylene plastic; these materials are mixed and matched for particular needs. The implants may last up to 15 to 25 years.

To read about a patient who underwent successful knee replacement, go to page 6 of My St. Luke's Story Book 2.

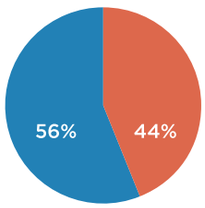
CLINICAL OUTCOMES OUTLINES.indd 52 16/01/2018 7:18 PM

CLINICAL OUTCOMES

CENSUS OF CASES

In 2015, the Institute of Orthopedics and Sports Medicine at St. Luke's Medical Center–Global City performed a total of 77 primary total joint replacement surgeries. These were composed of both primary total hip and knee surgeries. There were a total of 34 primary total hip replacement surgeries, and 43 total knee replacement surgeries (Figure 4).

FIGURE 4



- Total Hip Replacement *(N=34)*
- Total Knee Replacement *(N=43)*

RATES

Each surgery carries risks. The three common complications of total joint replacement are infection, deep vein thrombosis, and intraoperative periprosthetic fracture with worldwide incidence ranging up to 1–3%[1,2], 10–13%[3,4], and 2.95–27.8%[5,6,7] respectively.

The data gathered from the Institute of Orthopedics and Sports Medicine at St. Luke's–Global City for the 2015 calendar year showed total joint replacement surgeries having no cases of infection, no incidence of deep vein thrombosis, and no incidence of intraoperative periprosthetic fracture. These zero complication rates are considered significantly lower than worldwide incidences.

Our complication rates in 2015 are comparable to reported global rates in primary total joint replacement surgeries, thus making St. Luke's Medical Center–Global City's Joint Replacement Surgery Service one of the world's best.

REFERENCES

1 Lazzarini L, Pellizzer G, Stecca C, Viola R, de Lalla F. Postoperative infections following total knee replacement: An epidemiological study. Chemother. 2001 Apr;13(2):182-7.

2 Lindeque B, Hartman Z, Noshchenko A, Cruse M. Infection after primary total hip arthroplasty. Orthopedics. 2014 Apr; 37(4):257-65.

3 Sharrock NE, Gonzalez Della Valle A, Go G, Lyman S, Salvati EA. Potent anticoagulants are associated with a higher all-cause mortality rate after hip and knee arthroplasty. Clin Orthop Rel Res. 2008; 466: 714–721

4 Warwick, David. Prevention of Venous Thromboembolism in Total Knee and Hip Replacement. Circulation. 2012 May

5 Alden, Kris J., MD, PhD, William H. Duncan, MD, Robert T. Trousdale, MD, Mark W. Pagnano, MD, and George J. Haidukewych, MD. Intraoperative fracture during primary total knee arthroplasty. Clin Orthop Relat Res. 2010 Jan; 468(1): 90–95

6 Haidukewych GJ, Jacofsky DJ, Hanssen AD, Lewallen DG. Intraoperative fractures of the acetabulum during primary total hip arthroplasty. J Bone Joint Surg Am. 2006 Sep;88(9):1952-6.

7 Ponzio, Danielle MD, Alisina Shahi, MD, Andrew G. Park, MD, MBS, James J. Purtill, MD. Intraoperative proximal femoral fracture in primary cementless total hip arthroplasty. J Arthroplasty. 2015; 30(8): 1418–1422

CLINICAL OUTCOMES OUTLINES.indd 53 16/01/2018 7:18 PM

St. Luke's–Quezon City Brain Attack Team (clockwise from top left): Lynelle Q. Dacumos, Milanie V. Gonzales, Dr. Belinda L. Mesina-Nepomuceno, Dr. Geraldine Siena L. Mariano, Dr. Jose Leonard R. Pascual, Dr. Francesca Rose G. De Leon-Gacrama, Jennifer Ann P. Sanchez-Tapia, Charlene Kate R. Ramos, Dr. Ma. Cristina Z. Macrohon-Valdez, Dr. Jose C. Navarro, Dr. Maria Cristina Z. San Jose, and Dr. Alejandro F. Diaz. Not in the photo: Dr. Abdias V. Aquino

INSTITUTE FOR NEUROSCIENCES, STROKE SERVICE
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

STROKE PATIENTS' SATISFACTION SURVEY: WHY DOES IT MATTER AND WHY WE CARE

Citing the latest World Health Organization data published in May 2014, online health research outfit World Life Expectancy of the U.S.-based Leduc Media reported stroke deaths in the Philippines reaching 63,261 or 12.14% of total deaths and 119.21 per 100,000 population, thus ranking the country 54th in the world.

The lethality of stroke has made St. Luke's Medical Center–Quezon City go the extra mile in developing its capacity and capability to handle and ensure patients' survival and quality of life.

Measuring its advances and success in this field, however, requires primary data that can come only from the patients themselves and their relatives based on their own experiences at the St. Luke's–Quezon City.

WHAT CAN BE GAINED FROM PATIENT SURVEYS

The Stroke Service of St. Luke's–Quezon City has shown consistent quality of care by its strong adherence to high standards of measures and clinical outcome goals.

Nonetheless, evaluation of care needs to include the patients' expectations and preferences and how well these are being met by the hospital and its care team. Conducting patient satisfaction surveys and appraising the results, therefore, enable the Stroke Service to identify areas for improvement and prove the importance of patient representation in quality assessment.

CLINICAL OUTCOMES OUTLINES.indd 54 16/01/2018 7:18 PM

FIGURE 1

11 STROKE PEF QUESTIONS AND THEIR CORRESPONDING MEAN SCORE

Actual Mean Scores of Stroke Patient Evaluation Form (PEF) for Questions 1 to 11, St. Luke's Medical Center–Quezon City, January to December 2015.

LEGEND

5 strongly agree | **4** agree | **3** neutral | **2** disagree | **1** strongly disagree | **N/A** not applicable

Q1 2015 | **Q2 2015** | **Q3 2015** | **Q4 2015**

CLINICAL OUTCOMES OUTLINES.indd 55 16/01/2018 7:18 PM

8 I was provided adequate instructions and referral to appropriate clinic/facilities (if applicable, for those who opted to follow up outside Metro Manila)

9 The cost of my treatment and hospital stay is reasonable.

10 If future hospitalization for stroke is required, I would still choose St. Luke's Medical Center.

11 I would recommend St. Luke's Medical Center to other patients in need of stroke treatment.

St. Luke's is the the first hospital in the country to institutionalize acute stroke care.

CLINICAL OUTCOMES OUTLINES.indd 56 16/01/2018 7:18 PM

FIGURE 1

This picture shows a blood clot blocking an artery in the brain. Without enough blood flow, brain cells begin to die[5].

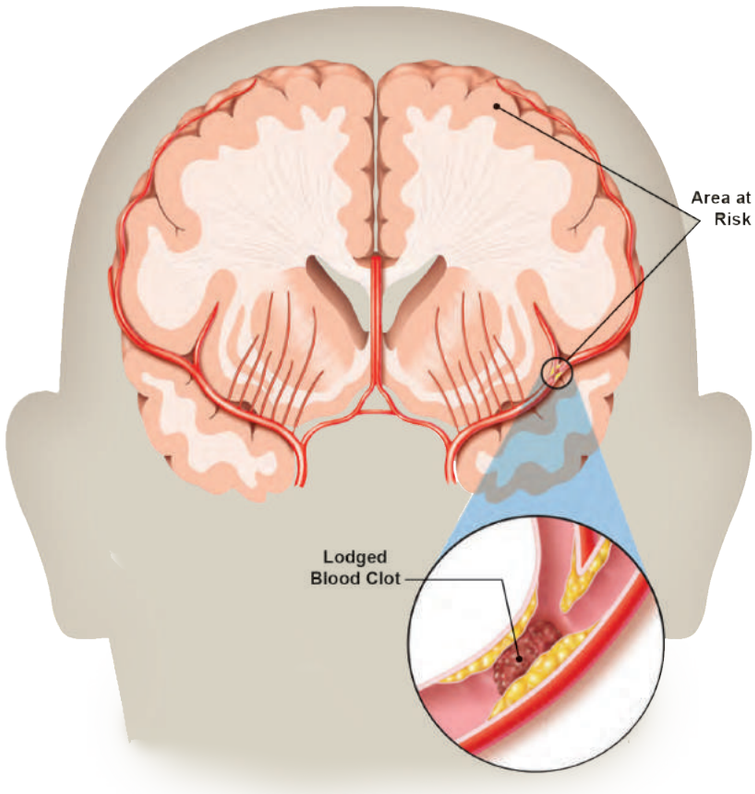


Image retrieved from http://www.stroke.org/stroke-resources/resource-library/explaining-stroke

FIGURE 2

Brain Attack Calls and Acute Ischemic Stroke from 2012 to 2015

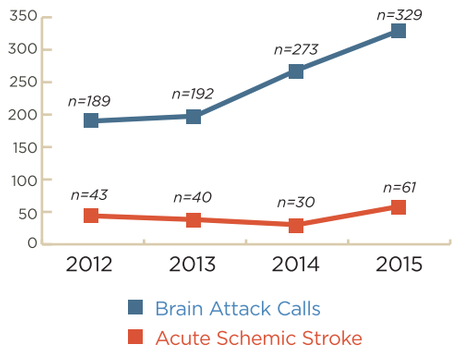


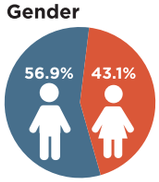
FIGURE 3

Demographic and clinical profile of stroke patients who were seen by the Brain Attack Team, St. Luke's Medical Center–Global City (N=174)

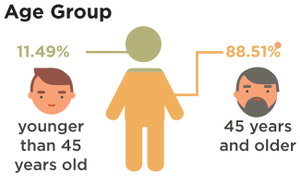
Age in Years

Mean	64.48
SD	16.84
Median	65.50
Min	23.00
Max	103.00

Gender



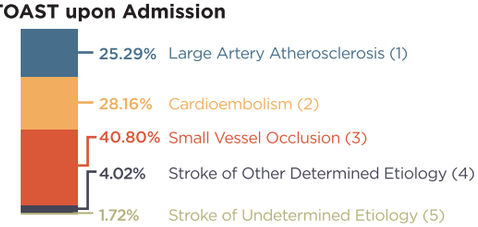
Age Group



Ictus to Door Time (hr:min:sec)

Mean	2:01:35
SD	1:28:31
Median	1:35:30
Min	0:05:00
Max	6:00:00

TOAST upon Admission



The Institute for Neurosciences is a center of excellence in Neurology, Neurosurgery, and Neuroscience nursing in the Philippines.

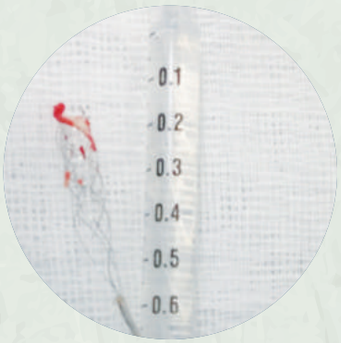
Comprising the Institute are the country's leading medical consultants and professionals in the Neurosciences equipped with the most advanced and comprehensive diagnostic and treatment facilities for neurological disorders.

STROKE

A stroke is a "brain attack." It occurs when an artery is blocked or when a blood vessel ruptures, interrupting blood flow to the brain. When either of these events happens, brain cells die. As blood flow is compromised, functions controlled by that area of the brain are lost, possibly impairing speech, strength, sensation, and memory. The best way to minimize damage and prevent permanent disability is to immediately bring the patient to the nearest hospital with facilities for acute stroke care.

CLINICAL OUTCOMES OUTLINES.indd 59 16/01/2018 7:19 PM

FIGURE 4



This is an example of a clot that was obtained from the middle cerebral artery using a mechanical thrombectomy device.

Inside the Acute Stroke unit at St. Luke's–Global City.

BAT IN ACTION

To ensure immediate diagnosis and treatment of stroke, St. Luke's–Global City has organized the Brain Attack Team (BAT).

The brain attack code is implemented for patients with stroke symptoms that develop within six hours from the time of onset. Once the brain attack alarm is sounded, a strict timetable is followed by the BAT.

BAT is a multidisciplinary team involving Emergency Care Physicians, ***Stroke Service*** (Stroke Neurologists, Neurosurgeons, Endovascular Specialists, Stroke Fellows, Neurology and Neurosurgery Residents and Stroke Nurse Specialists), Radiologists, Physical Therapists, Nutritionists, and Pathologists. The team maintains an amicable relationship with a shared passion for excellence. The service of the team is available 24/7.

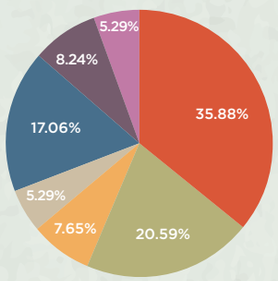
As an integral part of the BAT, the Stroke Service commits to delivering the best quality of care to stroke patients, ensuring prompt diagnosis and administration of specific time-bound therapies, neuroprotection, and acute medical and neurosurgical management.

The Stroke Service has been cited by the Joint Commission International as the first in the Philippines to have a Clinical Care Program Certification for Primary Stroke, attesting to its commitment to comply with the updated clinical practice guidelines by the American Heart Association/American Stroke Association.

FIGURE 5

Outcome of admitted stroke patients who were seen by the Brain Attack Team, St. Luke's Medical Center–Global City (N=174)

Modified Rankin Scale *(n=170)*



- No Symptoms (0)
- No Significant Disability (1)
- Slight Disability (2)
- Moderate Disability (3)
- Moderate Severe Disability (4)
- Severe Disability (5)
- Dead (6)

Mean	1.93
SD	2.00
Median	1.00
Min	0.00
Max	6.00

Mortality Rate *(n=170)*

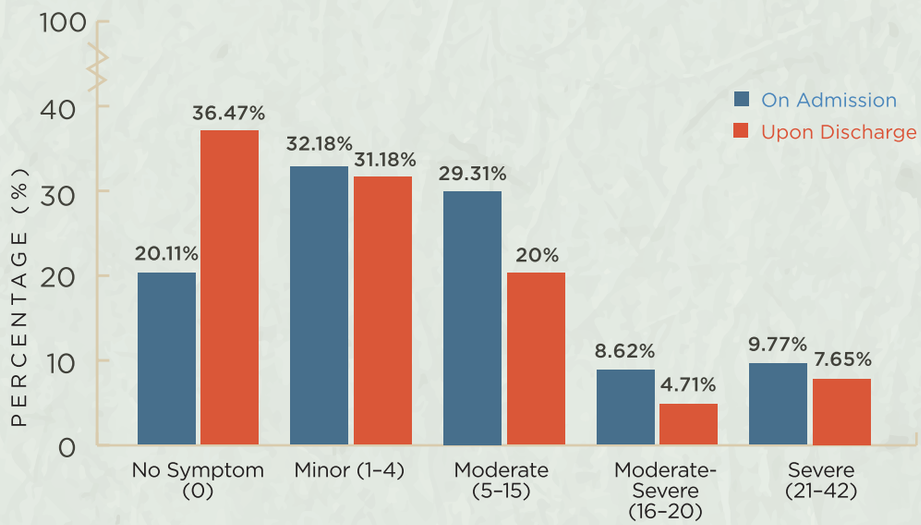
MRS of 6:	9
Rate	5.29%

Hospital Stay (in days) *(n=172)*

Mean	14.81
SD	39.04
Median	5.00
Min	1.00
Max	375.00

FIGURE 6

NIHSS on Admission and Upon Discharge (N=174)



CLINICAL OUTCOMES OUTLINES.indd 60 16/01/2018 7:19 PM

FIGURE 7

Acute Intervention for Acute Ischemic Stroke (N=23)

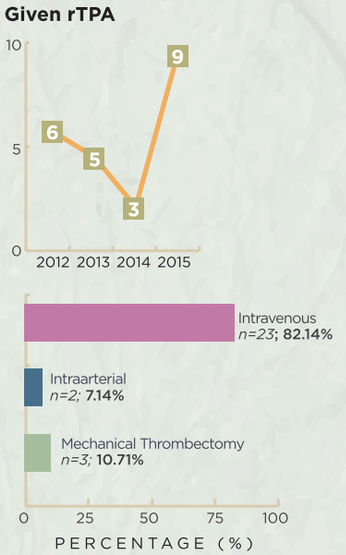
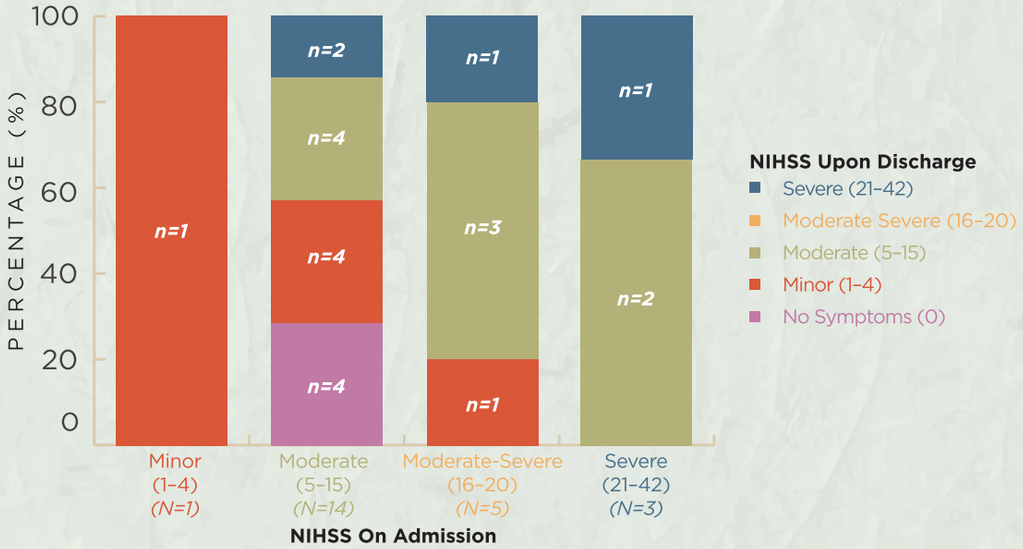


FIGURE 8

Distribution of Acute Ischemic Stroke Patients Given IV rTPA based on NIHSS On Admission and Upon Discharge (N=23)



CLINICAL OUTCOMES OF BAT PERFORMANCE

The concept of providing care for stroke patients in organized units has been reviewed over the past decades[2]. The care provided by Stroke Units has evolved into a multidisciplinary team approach. Team members carry out specific roles in the management of stroke patients, which includes highly specialized training for serial neurological assessments and comprehensive stroke care.

Figure 2 shows an increasing trend of attended stroke codes in the Emergency Care Services in four years (blue line). Of the total number of brain attack calls, there were 174 acute ischemic stroke cases with onset of symptoms within six hours (red line).

The mean age was 64, with male predominance. Most of the patients arrived in the emergency room within the second hour from the onset of the stroke symptoms. The severity of the stroke upon admission varied and majority had minor to moderate symptoms based on the National Institute of Health Stroke Scale (NIHSS). Clinical outcomes of patients with an acute ischemic stroke were based on the Modified Rankin Scale (Figure 5). Figure 6 shows a comparison of stroke severity on admission and upon discharge. Majority of the patients improved and were discharged with better function. However, most of those who arrived with a poor grade were also discharged with a poor function, but with the possibility of a moderate stroke severity at best.

The stroke mortality rate was 5.29%, compared with 6.3–9.3% rates of in-hospital mortality[1] (Figure 5).

For acute ischemic stroke, recombinant Tissue Plasminogen Activator or rTPA is the only FDA-approved medication that can potentially reverse the symptoms of a stroke by dissolving the clot and restoring the blood flow. rTPA is administered to eligible patients based on the onset of symptoms, stroke severity, radiologic findings and blood exams. The medication can be given intravenous, intra-arterial, or both. Recent advancement in acute ischemic stroke care is directed to the physical removal of the clot through endovascular means called mechanical thrombectomy, which uses a catheter maneuvered in the blood vessel to reach the trapped clot in the brain. The clot is withdrawn through the catheter to restore blood flow (Figure 4).

Figure 7 shows the total number of eligible patients who consented to acute intervention.

In the clinical study of IV rTPA, disability was reduced by at least 30% at three months[3]. The primary outcome showed improvement with the NIHSS by four points. Figure 8 shows that majority of patients given IV rTPA greatly improved upon discharge.

In conclusion, a dedicated stroke service, who can promptly assess a stroke patient and provide immediate treatment, can generate favorable outcomes.

REFERENCES

1 Matthew A. Edwardson, M. e. (2015, December). Ischemic Stroke Prognosis in adults. UpToDate.

2 Jeffrey M. Dayno, M. H. (1999). Acute Stroke Units. Journal of Stroke and Cerebrovascular Disease.

3 The NINDS rt-PA Study Group (1995). Tissue Plasminogen Activator for Acute Ischemic Stroke. New England Journal of Medicine.

4 Xian et al. Association of Preceding antithrombotic patients with acute ischemic stroke severing and in-hospital outcomes among patients with AF. JAMA 2017, 312 (10): 1057-1067

5 National Stroke Association. 2013. Explaining Stroke [Brochure]. Retrieved from http://www.stroke.org/stroke-resources/resource-library/explaining-stroke

CLINICAL OUTCOMES OUTLINES.indd 61 16/01/2018 7:19 PM

INSTITUTE OF UROLOGY
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

PERCUTANEOUS NEPHROLITHOTRIPSY (PCNL) FOR KIDNEY STONE REMOVAL

AUGUST 2014 TO JUNE 2016

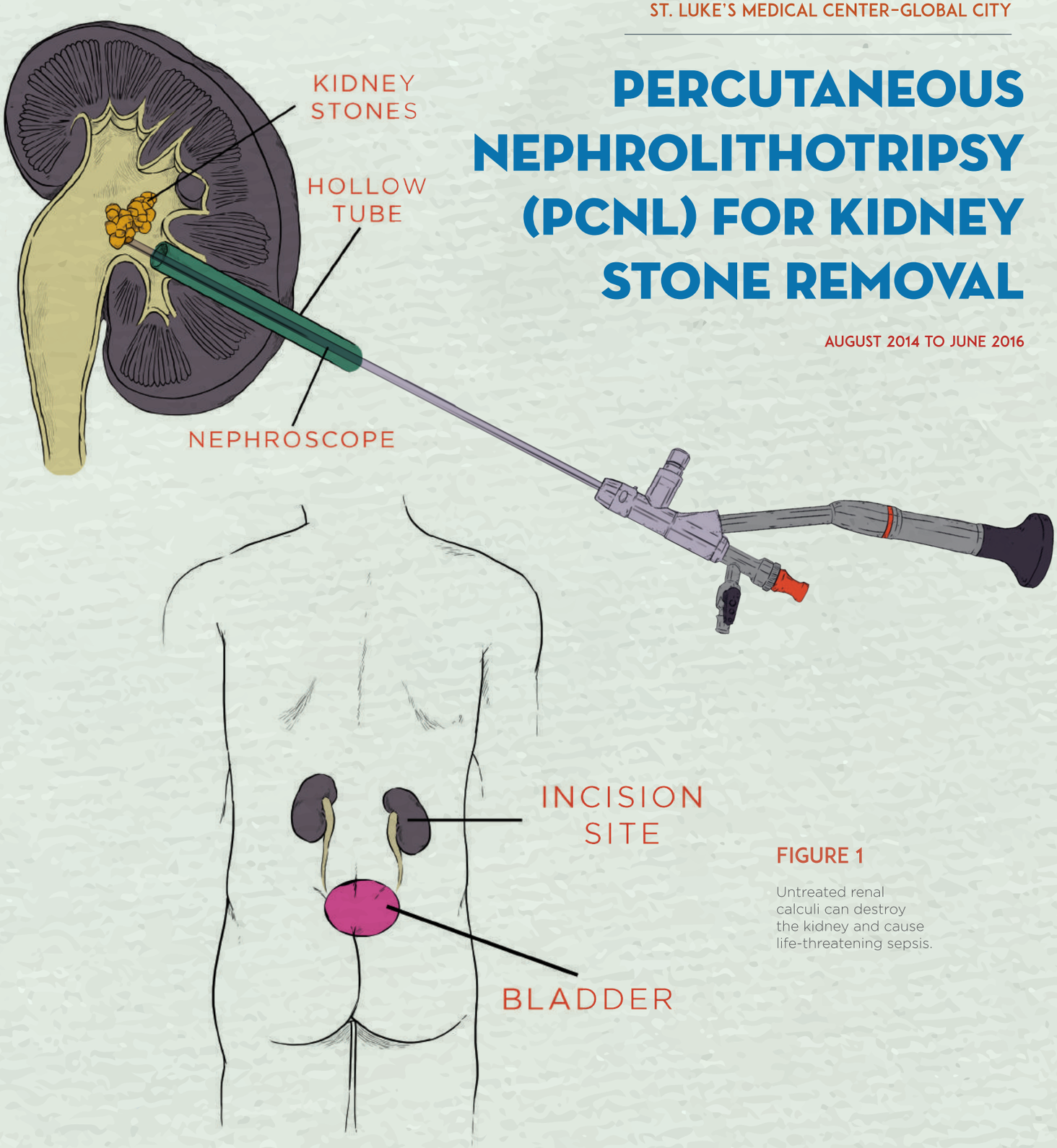


FIGURE 1

Untreated renal calculi can destroy the kidney and cause life-threatening sepsis.

CLINICAL OUTCOMES OUTLINES.indd 62 16/01/2018 7:19 PM

First row: (L–R) Dr. Josefino C. Castillo, Dr. Dennis P. Serrano, Head of the Institute of Urology of St. Luke's–Global City; Dr. Dennis G. Lusaya, Dr. Francis John C. Pile, and Dr. Jose Benito A. Abraham. Second row: Dr. Joel Patrick A. Aldana, and Dr. Mark C. Cellona

More and more people all over the world are reportedly at an increased risk of forming stones in their kidneys for various possible reasons—from unhealthy diet, dehydration, lifestyle, genetic, and metabolic factors.

A kidney stone is a solid concretion that forms in the kidneys from calcium and other minerals, which are supposed to be excreted by the body through the urine.

However, when the stones remain in the kidneys while increasing in size, the situation can lead to organ damage and renal failure if not expelled in time. Fortunately, there are now many new ways to effectively remove kidney stones.

Percutaneous nephrolithotripsy (PCNL), a minimally invasive urologic procedure, requires only a small puncture of up to about a centimeter through the skin to access the kidney stones.

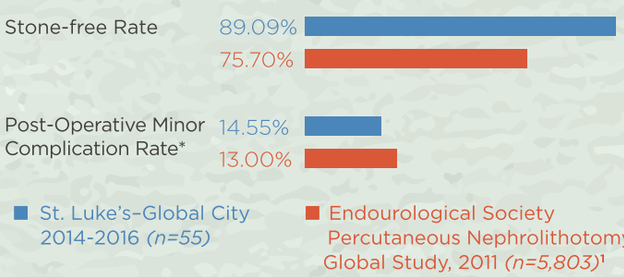
Through that puncture, a hollow tube is inserted into the kidney, and then a nephroscope is introduced. Stones are fragmented and removed using specialized instruments through the same channel.

CLINICAL OUTCOMES OUTLINES.indd 63 16/01/2018 7:19 PM

Percutaneous access during PCNL

FIGURE 2

Stone-free rate and Post-Operative Complication Rate of PCNL
St. Luke's Medical Center–Global City
August 2014 to June 2016



**Post-operative minor complications include fever, hemorrhage, or infection.*

RESULTS

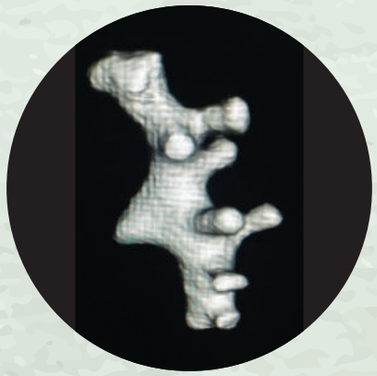
To determine its own clinical success rate, the Institute of Urology of St. Luke's–Global City collected retrospective data from all of its PCNL patients from August 2014 to June 2016.

Stone-free clinical success rate was obtained as well as operative time, hospital stay, and post-operative minor complications. The results were compared with those of the Endourological Society Percutaneous Nephrolithotomy Global Study in 2011.

A total of 55 patients were included in the study. The stone-free rate was at 88.09% and only 14.55% had minor post-operative complications (Figure 2). Mean Operative Time was at 162.49 minutes while mean blood loss was at 174.91 ml (Figure 3).

CLINICAL OUTCOMES OUTLINES.indd 64 16/01/2018 7:19 PM

Kidney stone fragmentation and removal during PCNL.



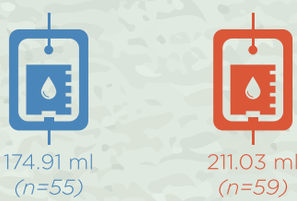
3D image of a staghorn kidney stone.

FIGURE 3

Mean Operative Time and Mean Blood Loss of PCNL St. Luke's Medical Center–Global City 2014 to 2016

Mean Operative Time

Mean Blood Loss



- St. Luke's–Global City 2014-2016
- Benchmark *(See references **2** and **3**)*

CONCLUSION

The Institute of Urology at St. Luke's–Global City PCNL has a high success rate of 88.09% complete stone removal with minor complication rate of 14.55%. The study was comparable with the Endourological Society Percutaneous Nephrolithotomy Global Study in 2011, having a success rate of 75.7% and a minor complication rate of 13%.

Furthermore, the mean operative time and blood loss were within acceptable range as well[2,3]. Therefore, PCNL from St. Luke's–Global City is an effective and safe technique overall for minimally invasive removal of kidney stones.

REFERENCES

1 De la Rosette J, Assimos D, Desai M, Gutierrez J, Lingeman J, Scarpa R, Tefekli A. The Clinical Research Office of the Endourological Society Percutaneous Nephrolithotomy Global Study: Indications, Complications, and Outcomes in 5803 Patients. J of Endourology. 2011; 25(1): 11-17.

2 Karakose A, Aydogdu O, Atesci YZ. Does the use of smaller amplatz sheath size reduce complication rates in percutaneous nephrolithotomy. Urol J. 2014 Sep 2;11(4):1752-6.

3 Movasseghi G, Hassani V, Mohaghegh MR, Safaeian R, Safari S, Zamani MM, Nabizadeh R. Comparison between spinal and general anesthesia in percutaneous nephrolithotomy. Anesth Pain Med. 2013 Dec 26;4(1):e13871.

CLINICAL OUTCOMES OUTLINES.indd 65 16/01/2018 7:19 PM

Some of the members of the St. Luke's Medical Center Robotic Surgery Team (clockwise from top left): Dr. Paul L. Sunga (Urology), Dr. Lou Chris Allen H. Reyes (Urology), Dr. Rebecca B. Singson (Obstetrics Gynecology), Dr. Narciso S. Navarro, Jr. (General Surgery), Dr. Menandro V. Siozon (General Surgery), Dr. Jennifer Marie B. José (Obstetrics Gynecology), Dr. Elsie B. Pascua (Obstetrics Gynecology), Dr. Eileen M. Manalo (Obstetrics Gynecology), Dr. Leo Francis N. Aquilizan (Obstetrics Gynecology), Dr. Marie Victoria S. Cruz-Javier (Obstetrics Gynecology), Dr. Elizabeth Joan E. Ocampo (Obstetrics Gynecology), Dr. Dennis P. Serrano (Urology), Dr. Jeffrey Jeronimo P. Domino (General Surgery), and Dr. Jun S. Dy (Urology). *Photo retrieved from asianTraveler.*

INSTITUTE OF SURGERY
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

LEADING THE WAY IN ADVANCED TECHNOLOGIES

In the Philippines, St. Luke's Medical Center is leading the way in cutting-edge technology—from laparoscopy to robotics—making surgeries less and less invasive. Unlike open surgery, laparoscopic procedure involves just a small incision, through which the laparoscope is inserted.

LAPAROSCOPY

A thin rod with a lighted telescope at the end, the laparoscope provides visual display of the area, and small surgical instruments are placed inside for the surgeon to perform the procedure.

Laparoscopic procedures for surgery in general, especially prostatectomy and hysterectomy among other gynecologic and urologic operations, have been rapidly gaining acceptance and support in the Philippines.

More than reducing the invasiveness of traditional open surgery, laparoscopy improves functional results.

CLINICAL OUTCOMES OUTLINES.indd 66 16/01/2018 7:20 PM

MALE INCISION

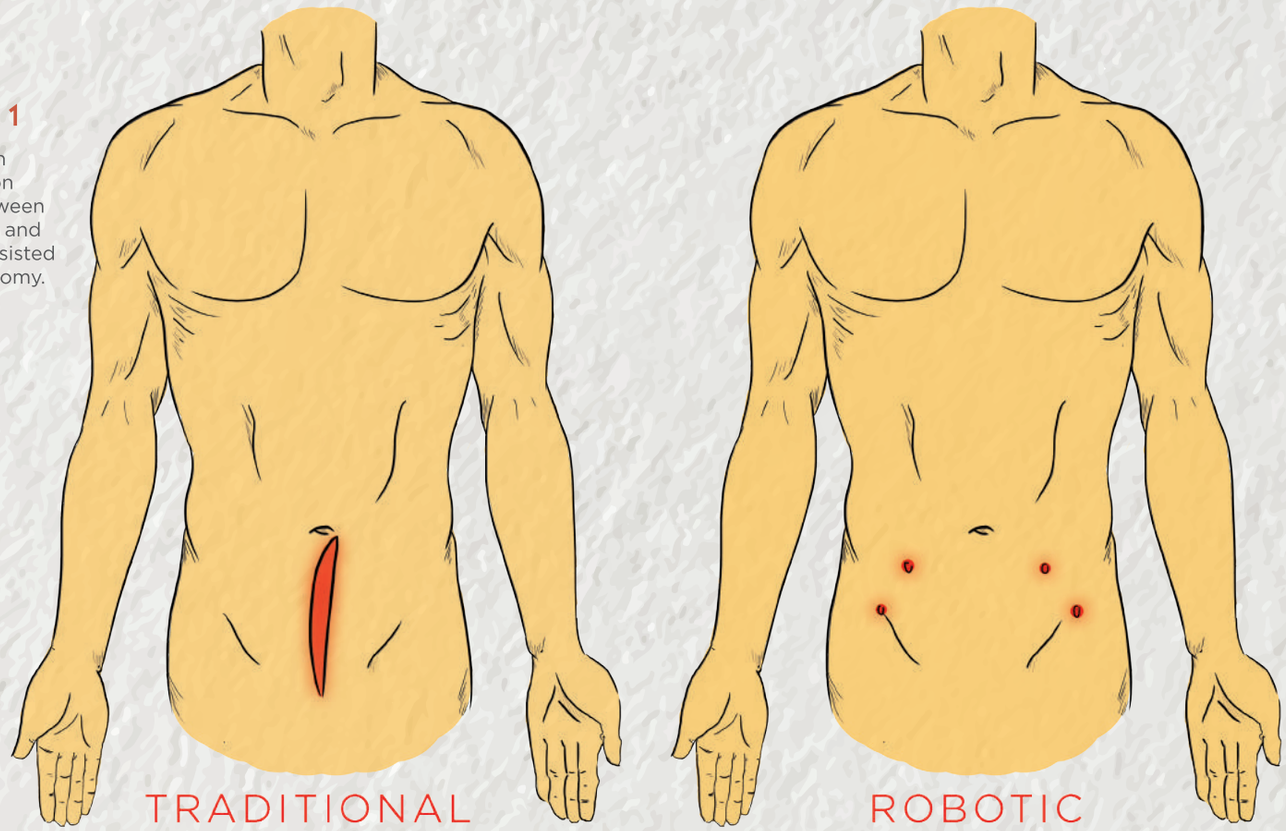


FIGURE 1

An incision comparison visual between traditional and robotic-assisted prostatectomy.

ROBOTIC PROSTATECTOMY

Laparoscopic Radical Prostatectomy still has disadvantages—steep learning curve, reduced range of motion, two-dimensional vision, impaired eye-hand coordination, and reduced haptic sense.

To address those difficulties, robot-assisted surgery was developed. This technology using the da Vinci platform ushered in three-dimensional vision, ten times optical magnification, and seven degrees of freedom for movement of surgical instruments. The surgeon becomes 100% in control of the da Vinci system, enabling him to make precise manipulation of tiny instruments inside the body.

The Robot-assisted Radical Prostatectomy (RARP) began in 2000 with the first cases done in France and Germany. The RARP involves the use of robotics for the removal of the prostate gland or a part thereof because of cancer or other abnormalities.

In 2004, the RARP technique was standardized and the da Vinci Si Robot system adopted.

The prostate is a walnut-size gland located in front of the anus and between the penis and the urinary bladder. Accessing and removing it through RARP is more effective and convenient than laparoscopy.

Prostate cancer, according to Dr. Dennis P. Serrano, head of the St. Luke's–Global City Institute of Urology, is projected to cause the death of more than 26,000 men globally.

"Prostate cancer has emerged as the fourth most common and the fourth leading killer malignancy among Filipino males," Dr. Serrano says.

"But with the advent of PSA (prostate specific-antigen) testing and the advocacy for yearly digital rectal examination in the aging male, physicians are now catching prostate cancer earlier. If diagnosed early, prostate cancer can be cured," he elaborates.

The robotic system was acquired by St. Luke's in November 2010 for use in complex urologic, gynecologic and general surgery procedures. The acquisition made St. Luke's–Global City the first to perform RARP in the country.

CLINICAL OUTCOMES OUTLINES.indd 67 16/01/2018 7:20 PM

FEMALE REPRODUCTIVE SYSTEM

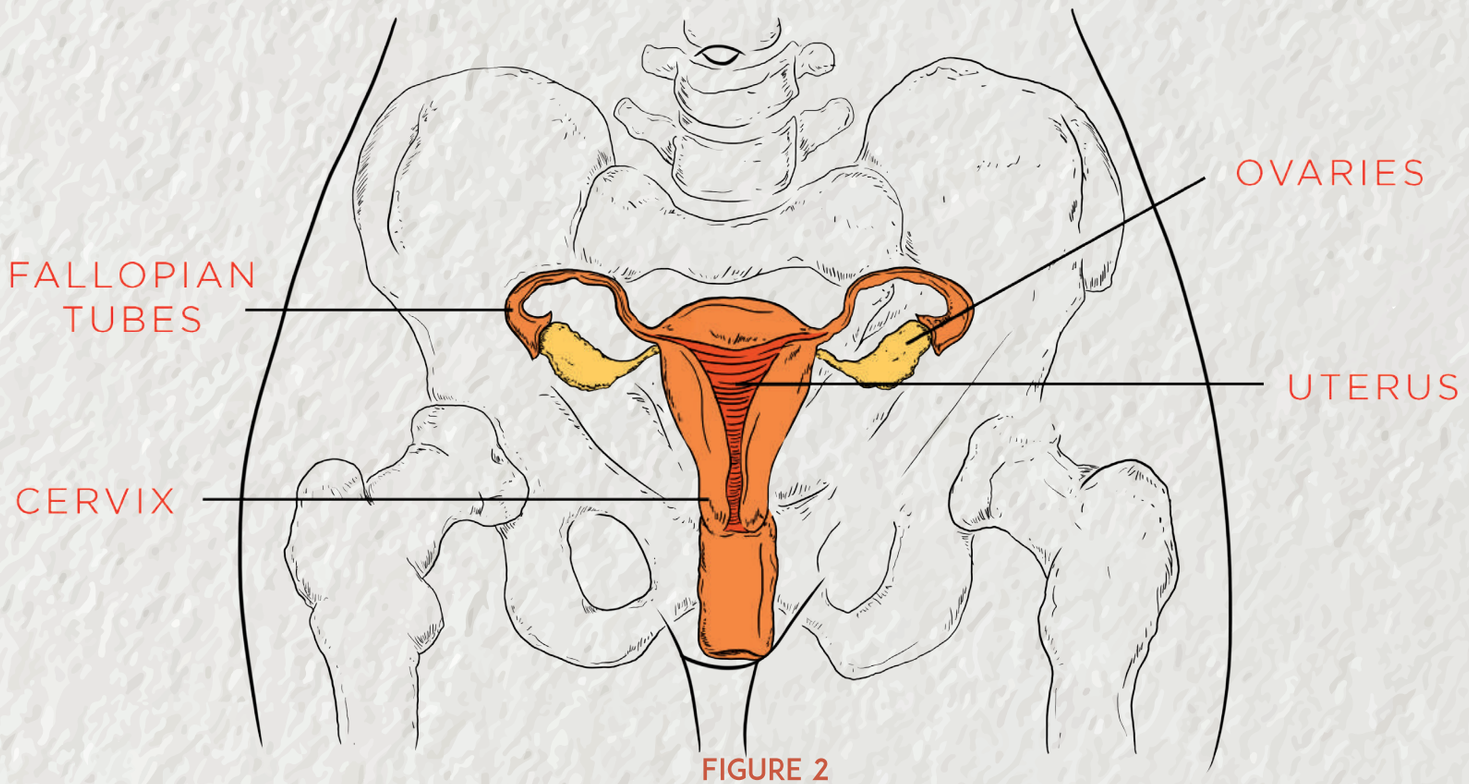


FIGURE 2

Diagram of the female reproductive system.

ROBOTIC GYNECOLOGIC SURGERY

By 2014, St. Luke's had performed over 300 robotic surgical procedures to earn the distinction of handling the most number of gynecologic robotic cases in the Philippines. Today, St. Luke's is one of the leading exponents of robotic surgery in Southeast Asia.

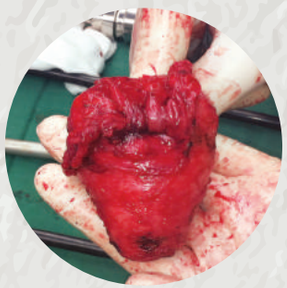
St. Luke's Robotic Gynecologic Surgery Section has a core group of five doctors certified by U.S.-based Intuitive Surgical, Inc. makers of the da Vinci Si system.

The robot-assisted gynecologic surgeries performed by St. Luke's included the removal of the uterus (hysterectomy), myomas or tumors (myomectomy) and cyst in the ovaries (oophorectomy); reattachment of the fallopian tubes (tubal reanastornosis), and suspension of the vaginal vault to the sacrum (sacrocolpopexy).

Gynecologic cases account for the highest utilization rate for robotic surgery in St. Luke's, accounting for 289 patients from 2010 to September 2015. All 289 cases exhibited 98% success, 100% absence of infection incidence, and minimal proportion of blood transfusion during the operations. The complication rate is 0.85%, and average hospital stay just two to four days, much lower than in open surgery.

Being the least invasive surgical procedure, robotics minimized the patients' anxieties and pain while speeding up their return to normal activities as indicated by anecdotal testimonies, thus highly suited for patients above 65 years old.

Two of the patients surveyed were more than 80 years old and they showed no unsightly scars after the operations.



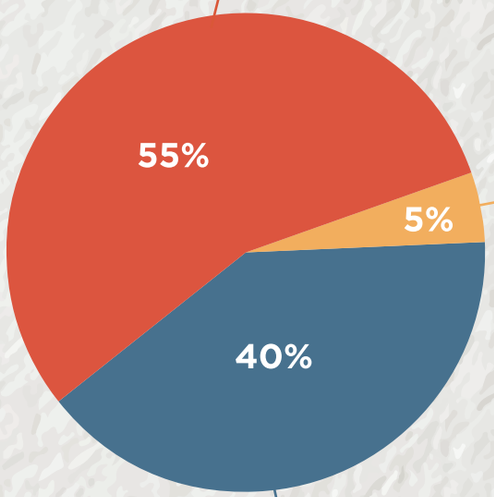
A removed uterus after a subtotal hysterectomy

CLINICAL OUTCOMES OUTLINES.indd 68 16/01/2018 7:20 PM

Dr. Jennifer Marie B. José, Section Head for Urogynecology and Robotics Surgery, St. Luke's—Global City. *Photo retrieved from Philippine Tatler.*

FIGURE 3

St. Luke's Medical Center Robotic Surgery Case Breakdown as of June 2017 (N=801)



441
OBSTETRICS AND GYNECOLOGY CASES

- 291 Hysterectomy
- 76 Myomectomy
- 46 Ovarian Cystectomy
- 15 Sacrocolpopexy
- 12 Salphingoophrectomy/ Oophorectomy/ Oophorocystectomy
- 1 Tubal Reanastomosis

39
GENERAL SURGERY CASES

- 12 Thyroidectomy
- 5 Partial Nephrectomy
- 4 LAR/APR
- 4 Tonsilectomy
- 3 Pyeloplasty
- 3 Lobectomy
- 2 ER
- 2 TORS
- 1 Nissen Fundoplication
- 1 Esophagectomy
- 1 Nephrectomy
- 1 Others

321
UROLOGY CASES

- 321 Prostatectomy

CONCLUSION

St. Luke's investments in new and emerging technologies enable it to offer a complete menu of specialized healthcare services for both men and women.

Aside from laparoscopy and robotics technology, St. Luke's has all the equipment for gynelogic treatments and surgeries, including yearly checkups, prenatal care and childbirth deliveries, and post-delivery maternal care, among many others.

The Department of Obstetrics and Gynecology is equipped with the latest top-of-the-line ultrasound machines and staffed by outstanding clinicians who competently evaluate, diagnose, and manage each patient. The diagnostic procedures are supported by advanced imaging equipment, enabling precise and accurate detection of disease and abnormalities in women's reproductive anatomy, making the St. Luke's the center of excellence in women's health in the Philippines.

And with laparoscopy and robotics, surgical methodologies in the Philippines are becoming less and less invasive, with St. Luke's leading the way in technology-driven advances in modern medicine.

To read about a patient who underwent successful robotic surgery, go to page 16 of My St. Luke's Story Book 2.

CLINICAL OUTCOMES OUTLINES.indd 69 16/01/2018 7:20 PM

Members of the STEMI Team (L–R): Dr. Ryan D. Buendia (Cardiologist), Dr. Edgar Jolly P. Santos (Emergency Medicine Doctor), Dr. John David S. Tan (Cardiologist), and Dr. Jose Nicolas M. Cruz (Cardiologist).

HEART INSTITUTE
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

PRIMARY ANGIOPLASTY OUTCOMES IN STEMI PATIENTS

SEPTEMBER 2014 TO AUGUST 2015

Diseases of the heart and the vascular system remain the top two causes of deaths in the country, according to the Philippine Council for Health Research and Development.

In an online report, the council cited a 2009 study by the Department of Health placing deaths from cardiovascular diseases at 170,000 yearly from only 85,000 more than 20 years ago.

The increase in mortality rate to 19 deaths an hour underscores the need for treatment within six hours and therapy application within 90 minutes.

Results of randomized clinical trials by the American Heart Association/American College of Cardiology (AHA/ACC) and the European Society of Cardiology (ESC) showed the need to decrease the time between a heart attack patient's arrival at the emergency department and the insertion of a catheter to a chamber of his heart to restore bloodflow.

Reducing that "door-to-balloon time" increases the survival rate of patients with acute coronary syndrome (ST segment elevation myocardial infarction) also known as ACS-STEMI, or cardiac arrest.

Objective: To assess the capability of St. Luke's Medical Center–Global City in providing the most efficient primary angioplasty or rescue PCI (percutaneous coronary intervention) to ACS-STEMI patients a year after its "STEMI Program" was established.

Angioplasty or PCI restores bloodflow to the heart of a STEMI patient by inserting and inflating a balloon inside his blocked artery to open it up.

The STEMI program aims to comply with the AHA/ACC and ESC recommended standards and to measure the outcomes of treatments.

CLINICAL OUTCOMES OUTLINES.indd 70 16/01/2018 7:20 PM

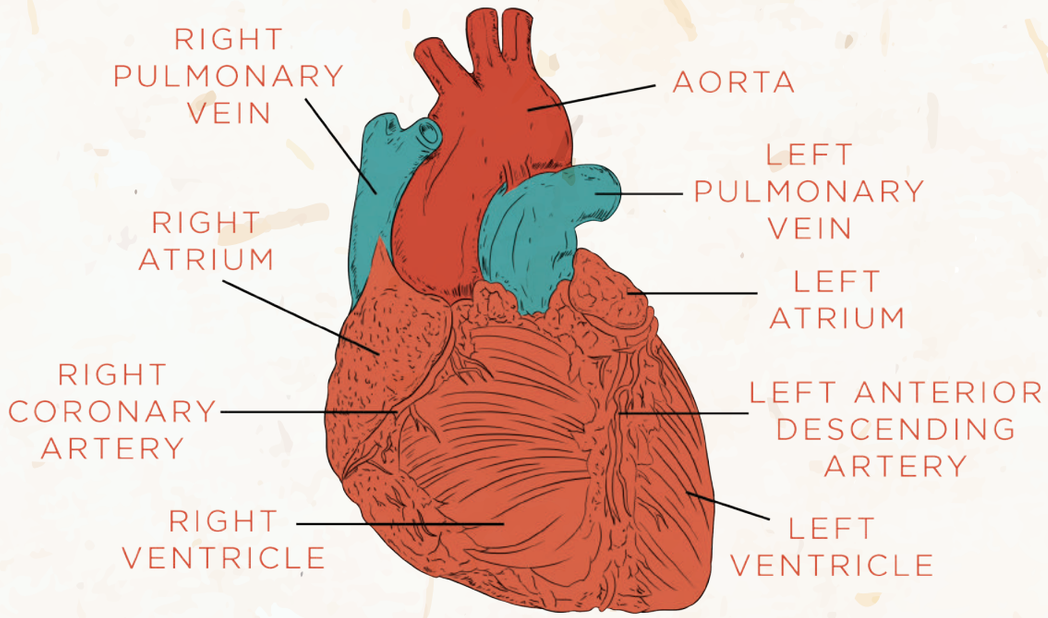


FIGURE 1

Diagram of the human heart.

Design, Setting, and Patients: An observational, retrospective study involving 44 patients who came in as a case of ACS-STEMI to which the cardiac catheterization lab was activated and emergent coronary angiography was performed from September 1, 2014, to September 1, 2015.

Main Outcome Measures: Door-to-ECG time, door-to-balloon time (DBT) or door-to-open-artery time, procedural and clinical success post-PCI, quality of care measures in patients presenting with ACS-STEMI, proportion of bleeding, repeat revascularizations, renal failure, average length of hospital stay, and in-hospital mortality.

INTRODUCTION

The incidence of coronary heart disease worldwide is projected to increase by 100% in men and 80% in women from 1990 to 2020. Disability-adjusted life years lost will increase 107% in men and 74% in women[1].

Incidence of ACS in the United States grew to 1.4 million in 2014[2]. Almost a fourth of these cases were STEMI, a form of ACS with the highest mortality rate of 8.9% at six months. Thirty percent of patients fail to receive PCI or thrombolytic therapy[3].

In the Philippines, Coronary Artery Disease (CAD) and ACS are among the top 10 causes of morbidity and mortality in 2009. ACS in males at 66 years old comprised 67%. Predominant risk factors were hypertension and diabetes mellitus[4].

The 2013 data of the ACS Registry of the Philippine Heart Association showed a 16% in-hospital mortality among ACS-STEMI patients. Symptom-to-ER consult time averaged 28 hours, door-to-ECG 3.5 hours, door-to-open-artery 30 hours, and door-to-fibrinolytic-therapy (door-to-needle time) 2.0 hours. Primary causes of delay were lack of patient's awareness of ACS symptoms, and reluctance to consent to procedure for financial reasons[5].

The most important factor in reducing ACS-STEMI morbidity and mortality is early reperfusion therapy, or restoring bloodflow to the heart either through or around a blocked artery. Mechanical recanalization by Primary PCI (PPCI) is preferred for its superiority to fibrinolysis. The objective is to restore coronary flow and myocardial tissue perfusion fast.

The 2013 AHA/ACC STEMI guidelines recommend PPCI therapy for ACS-STEMI within 90 minutes upon arrival at a PPCI-capable hospital, or 120 minutes or less in a non-PPCI-capable hospital and requires transfer[6].

An analysis by the National Registry for Acute Myocardial Infarction of more than 27,000 patients undergoing PPCI showed the lowest mortality rate for those having it within 60 minutes, and higher for those in more than 120 minutes. De Luca demonstrated a 7.5% increase in one-year mortality rate for every 30-minute increase in time from symptom onset to PPCI (open artery)[7].

In the Philippines, St. Luke's–Global City is one of the few hospitals that offer PPCI 24/7. Data from patients admitted for ACS-STEMI in the Emergency Care Services have been gathered since the St. Luke's–Global City formed its STEMI team under the supervision of the Heart Institute and the Interventional Cardiology Fellowship Program with the support of the hospital management.

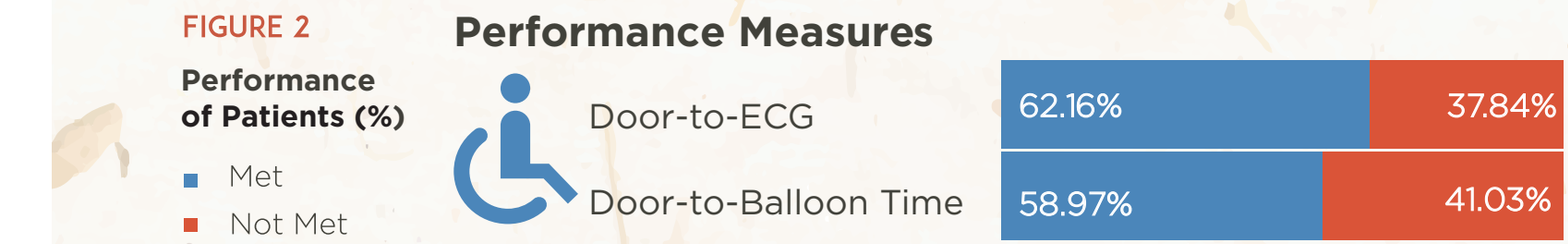
The aim is to identify the clinical parameters measured during a one-year period and evaluate the areas of improvement before and after establishing the program. It will determine compliance with the ESC/AHA guidelines for door-to-ECG time of less than 10 minutes, and door-to-open-artery time of less than 90.

CLINICAL OUTCOMES OUTLINES.indd 71 16/01/2018 7:20 PM

FIGURE 2

Performance of Patients (%)

- Met
- Not Met



METHODS/ANALYSIS

The data in this study were culled from the database of St. Luke's–Global City's cardiac catheterization laboratory comprising the patients' charts and Cardivascular Disease Information System (CVDIS) and operations records.

Each patient has a CVDIS database of his profile, demographics, medical history, medications, and indications for current and previous procedures done at the cardiac cath lab.

The review of procedures and lesion scoring (Syntax Scoring) uses the Picture Archiving and Communications System (PACS) and the angiography archives of the cath lab. An Excel STEMI record at the Coronary Care Unit (CCU) ensures standardized data gathering on identified clinical parameters.

Each STEMI patient at the CCU is guided and monitored by the cardiac cath fellow on duty to complete the data needed prior to discharge. The data gathering covers patients having ACS and emergent coronary angiography at the cath lab.

Each patient served as the unit of analysis for evaluation of variables, morbidity, and mortality, which were compared across all primary percutaneous/rescue angioplasties, whether from the ECS or the CCU.

Time of arrival at the ECS, or first contact with a medical personnel, up to the time the patient reached the cath lab and the culprit artery opened was recorded by either the ECS staff or the interventional cath fellow on duty to determine the door-to-balloon or the door-to-open-artery time.

The patients' medical records indicating the outcomes of their admission and treatments were reviewed. The outcomes were measured in terms of mortality, repeat revascularizations or coronary artery bypass surgery, bleeding, or other complications (i.e., nephropathy).

RESULTS

The St. Luke's–Global City organized the STEMI team on September 1, 2014. The team forms part of a program devised by the St. Luke's Heart Institute to provide 24/7 PPCI services and attain the less than 90-minute door-to-balloon / door-to-open-artery time.

This pioneering program involves at least 24 dedicated interventional cardiologists taking turns every three days to serve as "on-call" operators. Each interventionist has a preferred "back-up" operator to take his place if he cannot make it to the hospital within 30 minutes from "call time". Should the backup be indisposed, the first available operator among the 24 interventionists would be called upon immediately.

Once a patient walks in for ACS symptoms, the staff must do 12 lead ECGs within 10 minutes for prompt interpretation by a consultant, a cardiology fellow or an Internal Medicine resident on duty.

They can activate a "STEMI team" response, which also requires the cath lab staff to be in the hospital within 30 minutes from the first call.

The CCU is also notified to reserve a room for the patient. The elevator nearest to the ECS complex is used to cut travel time to the cath lab. The fellow on duty records the time and takes note of the parameters. Open artery or balloon time is recorded. After the primary angioplasty, the 12 lead ECGs are done anew at the CCU to record ST segment elevation resolution.

The 12-month data covered 44 patients, compared with the 59 prior to the establishment of the STEMI team. The 59 patients from March 2010 to August 2014 had an average door-to-ECG time of 25 minutes and door-to-open-artery/door-to-balloon time of 152 minutes[8].

The new system registered a door-to-ECG time of 9.46 minutes, and the average door-to-balloon/open-artery 86.08 minutes, both less than the ESC/AHA/ACC recommendations.

CLINICAL OUTCOMES OUTLINES.indd 72 16/01/2018 7:21 PM

Diseases of the heart and the vascular system have remained the top two causes of deaths in the country, according to the Philippine Council for Health Research and Development. The increase in mortality rate to 19 deaths an hour underscores the need for treatment within six hours and therapy application shortened to within 90 minutes.

CONCLUSION

The establishment of the STEMI team has significantly decreased the door-to-ECG, door-to-balloon and door-to-open-artery time for ACS-STEMI patients treated with PPCI.

The number of patients referred to the STEMI team increased due to early detection of angina—from 59 in four years to 44 in one.

Efficiency of coordination between and among the doctors, ECS, cath lab and CCU staff improved. No complications such as bleeding (>90% of patients accessed thru the radial artery), congestive heart failure or significant increase in creatinine (contrast-induced nephropathy) were reported in the PPCI procedures involving 39 of the 44 patients.

Fifty-nine percent (59%), or 23 out of the 39 patients who underwent PPCI had it in less than 90 minutes. Reasons for the delay in the other 16 patients were the protracted signing of consent by relatives and late arrival of the cath lab staff during late night and/ or early morning calls. Only one among the patients had repeat revascularization after undergoing the PPCI. Average length of hospital stay was 6.27 days.

The program undergoes progressive improvement systemically and systematically. Regular monthly meetings identify the delays and their causes for prompt formulation of corresponding measures.

The Team conducts quarterly lectures for nurses on ECGs, STEMI and symptom recognition.

Likewise, the Heart Institute holds quarterly STEMI symposiums for doctors and the staff of nearby hospitals to improve the system of referral to St. Luke's–Global City.

The system promotes awareness on PPCI as the gold standard of therapy for ACS STEMI. Members of the STEMI Committee conduct lectures for laypersons around the Bonifacio Global City community and do radio/ television interviews (e.g. DZMM TeleRadyo's *Magandang Gabi, Dok*).

The St. Luke's–Global City emerged at the August 2015 Asia Primary Angioplasty Congress in Singapore as at par with other Asian countries in delivering the best quality of care for ACS STEMI patients[9].

REFERENCES

1 Fletcher GJ, Vogel RA, et. al., 33rd Bethesda Conference: Preventive Cardiology: How can we do better? J Am Coll Cardiol 2002; 40(4); 579-651

2 Heart Disease and Stroke Statistics, Circulation. 2014; 129: 28-29

3 American Heart Association/American College of Cardiology data, heart.org 2014

4 Philippine Heart Association Clinical Practice Guidelines for CAD 2009

5 Philippine Heart Association, Acute Coronary Syndrome Updates, May 31,2015

6 O'Gara PT, Kuschen FG, et. al., 2013 AACF/ AHA guideline for management of ST-segment elevation myocardial infarction; executive summary; a report on American College of Cardiology Foundation/ American Heart Association task force on practice guidelines. Circulation. 2013; 127(4): 529-555

7 Cannon CP, Gibson CM, et. al., Relationship of symptom onset-to-balloon time and door-to-balloon time with mortality in patients undergoing angioplasty for acute myocardial infarction. JAMA, 2000;283: 2941-2947.

8 Buendia, RD , Cruz, JNM "A Registry of Acute Coronary Syndrome-STEMI cases at St. Luke's Medical Center, Bonifacio Global City: Why do we need a STEMI team? (Pilot Study)" August 2014.

9 Buendia, RD, "STEMI data in Manila; Status of Primary Angioplasty in the Philippines", 2nd Asia Primary Angioplasty Congress, August 2015, Marina Mandarin, Singapore

CLINICAL OUTCOMES OUTLINES.indd 73 16/01/2018 7:21 PM

CENTER FOR STRUCTURAL HEART AND VASCULAR DISEASES
ST. LUKE'S MEDICAL CENTER-GLOBAL CITY

TRANSCATHETER AORTIC VALVE REPLACEMENT: EFFECTIVE THERAPY FOR SEVERE AORTIC VALVE STENOSIS

FEBRUARY 2012-AUGUST 2017

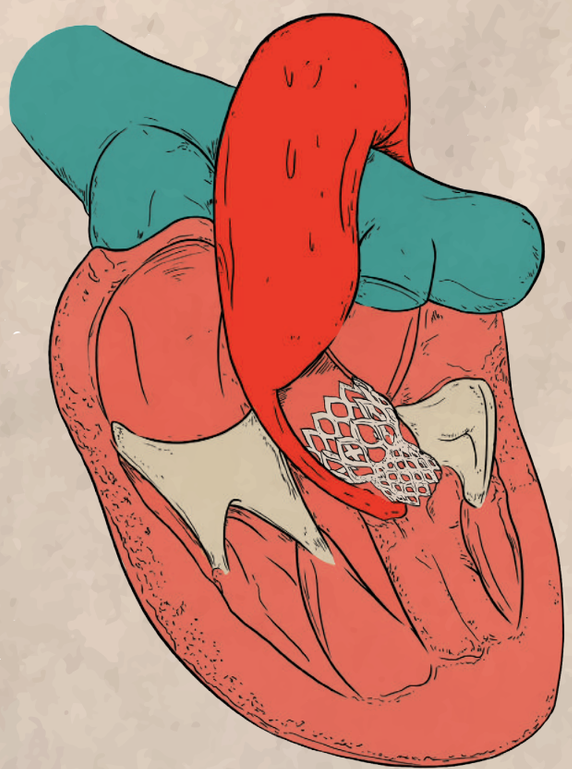
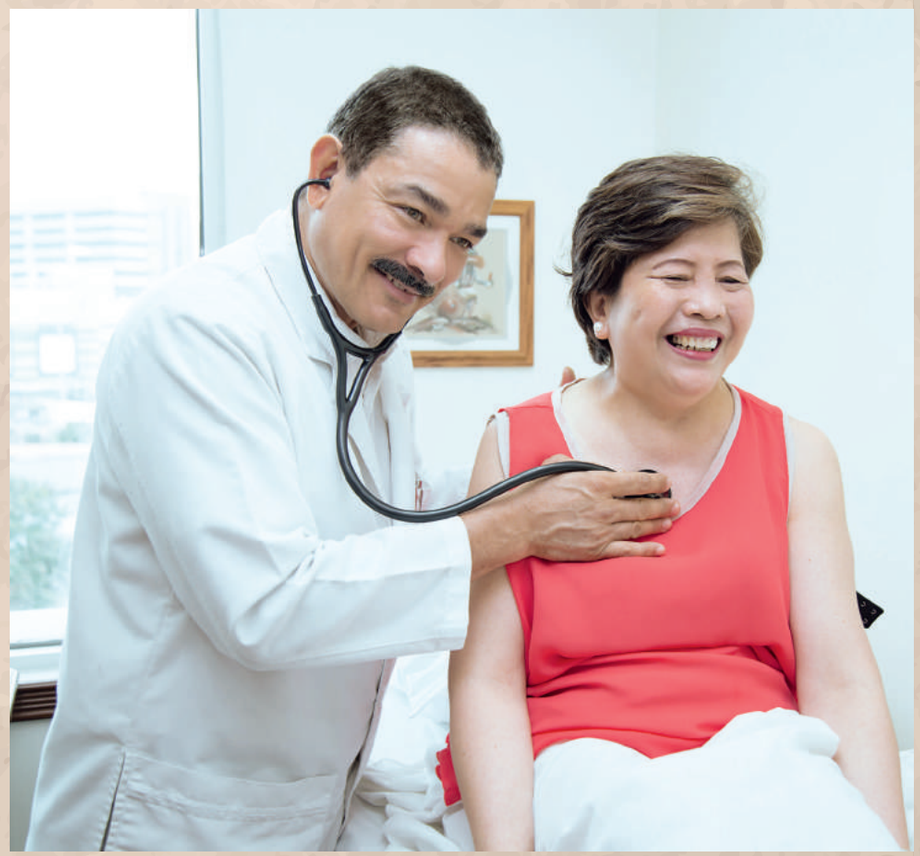


FIGURE 1
A bio-prosthetic valve in place within the distressed valve.



The first TAVR procedure in the Philippines was performed by the TAVR team led by Dr. Fabio Enrique B. Posas and Dr. Estanislao E. de Castro at St. Luke's-Global City in February 2012.

Aortic valve stenosis (AS) is defined as the narrowing of the valve opening because of valve leaflet calcification and fibrosis leading to leaflet stiffening and restriction of valve excursion. Prevented from opening fully, the constricted valve imposes significant flow restriction and increased hemodynamic stresses on the left ventricle. Left untreated, the hemodynamic stresses associated with severe AS eventually weaken the heart muscle and impair its pumping function.

Most patients with severe AS eventually develop symptoms which may manifest as chest pains or angina, fainting or syncope from the sudden drop in blood pressure, shortness of breath, fatigue, swelling as a result of fluid retention and heart failure. The onset of symptoms is ominous as they are often associated with increased risk of sudden death, shortened life expectancy, worsened quality of life and increased need for hospitalizations. Given that the disease process is a mechanical problem, medicines alone do not often influence the long term prognosis of these patients.

Most patients with AS go through long asymptomatic periods during which the heart is able to compensate. These patients are often older and best diagnosed through routine physical examinations. When necessary, ultrasound studies (2D echo) are recommended. Risk factors include age, a deformed aortic valve or congenitally anomalous valve (i.e. bicuspid valves), high blood pressure, high cholesterol, type-2 diabetes, smoking, chronic kidney disease and previous rheumatic fever.

Until recently, the standard of care and the only viable option for the management of severe, symptomatic AS was open heart surgical valve replacement (SAVR). However, the disease often manifests

CLINICAL OUTCOMES OUTLINES.indd 74 16/01/2018 7:21 PM

FIGURE 2

Baseline demographic characteristics of patients who underwent TAVR (N=105)

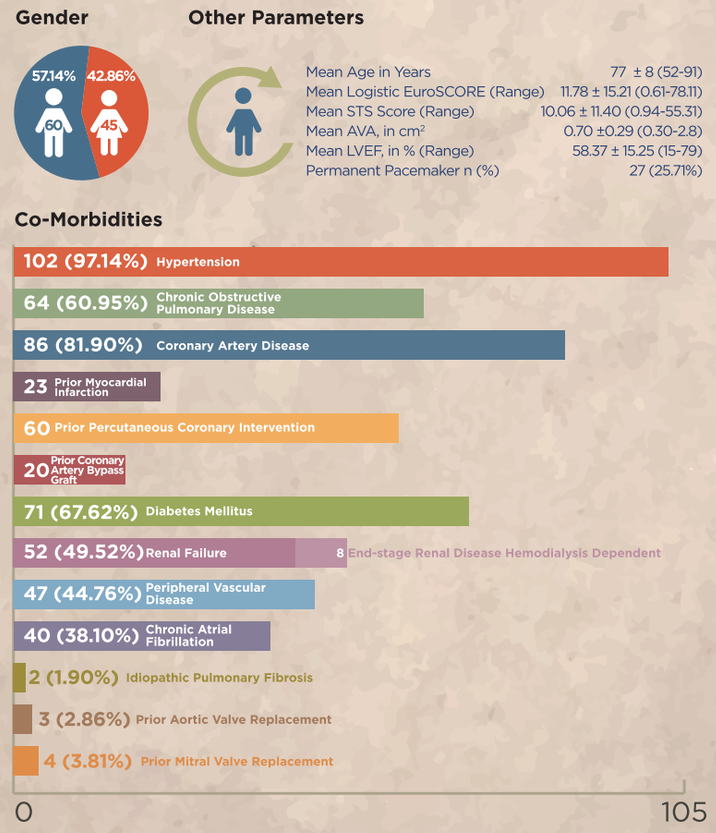


FIGURE 3

Additional High Risk Features (N=105)

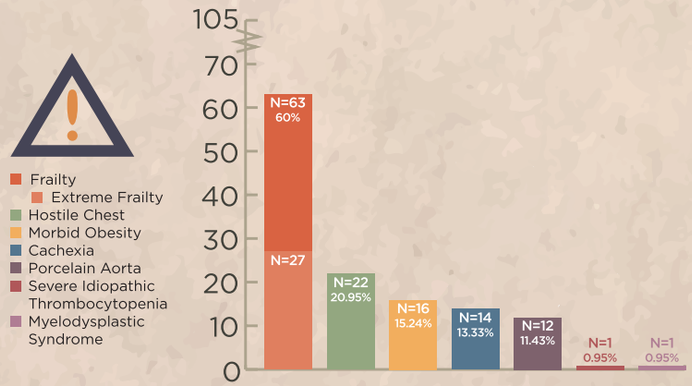
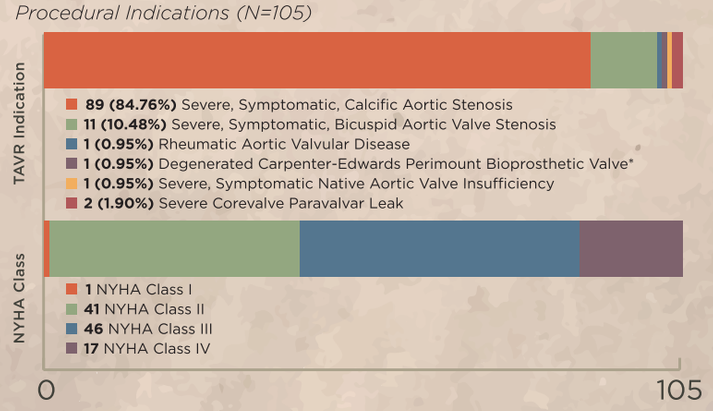


FIGURE 4

Procedural Indications (N=105)



among older individuals, who are often frail or may have multiple medical problems which increase the mortality or morbidity risk associated with SAVR. Transcatheter Aortic Valve Replacement (TAVR) is a minimally invasive option for aortic valve replacement which is often performed via the femoral or groin arteries and in selected patients, can often be done even without general anesthesia. "In patients with diseased femoral access vessels, the procedure can be done via the axillary or subclavian arteries, direct aortic punctures or trans apical (direct puncture of the apex of the heart)" explained Dr. Fabio Enrique B. Posas, an interventional cardiologist who heads the Center for Structural Heart and Vascular diseases at St. Luke's–Global City. TAVR utilizes catheters, X-ray and echocardiography guidance in order to advance, position, deliver and replace the diseased aortic valve with bioprosthetic valve implants (Figure 1). Once in optimal position within the aortic annulus and based on optimized images, the bioprosthetic valve is deployed using standard techniques. Dr. Posas is the only certified TAVR proctor in the Philippines, and together with Dr. Estanislao De Castro, a cardiothoracic surgeon, and a team of multi specialty physicians, performed the first TAVR in the Philippines in February of 2012.

Being less physically taxing and in some cases being performed without the need for general anesthesia, cuts nor incisions, TAVR was initially tested and shown to be effective therapy for AS patients who are elderly, high, or extreme risk and even inoperable patients with multiple and complex co-morbidities. More recent randomized trials in intermediate risk patients with severe symptomatic AS have shown that TAVR is equally beneficial when compared to SAVR. The benefits of TAVR include rapid recovery, shortened hospital stay and less blood transfusion.

TAVR is performed at St. Luke's–Global City by a team of specialists which include interventional cardiologists, cardiothoracic surgeons, cardiac imaging specialists, critical and pulmonary care specialists, nephrologists and cardiac anesthesiologists. All procedures are backed up by the most sophisticated medical imaging equipment, optimized systems of care and support systems that ensure unmatched patient experience, post-operative care and procedural outcomes that compare well with or surpass those reported at some of the best centers in the world.

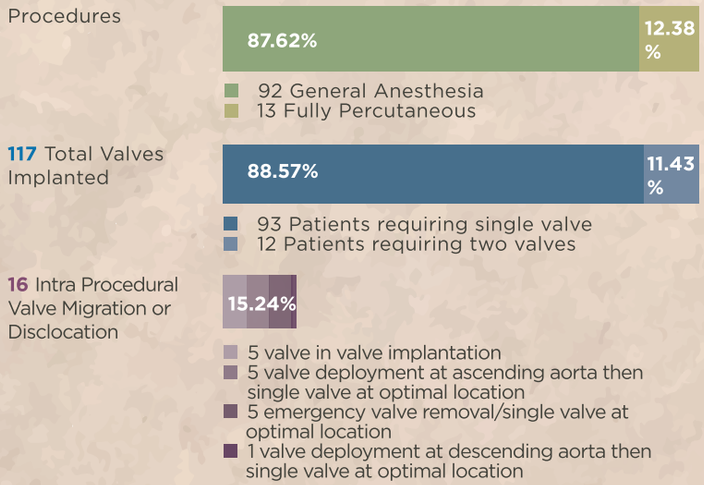
OUTCOMES

As of September 2017, the TAVR team has performed 105 TAVR procedures on 105 patients with multiple, complex co-morbidities. This body of TAVR evidence represents the most extensive, single center, single team of care TAVR experience in the Philippines. St. Luke's–Global City is now one of the most experienced TAVR centers in South East Asia, next only to two hospitals in Singapore.

The mean STS score was 10.06% while the mean EUROSCORE was 11.78%. The mean AVA was 0.70 +/- 0.29 cm2, mean LVEF was 58.37 +/- 15.25 (15-79) and the mean gradient was 46.89 mmHg. Co-morbidities included hypertension, diabetes, coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), renal failure, peripheral

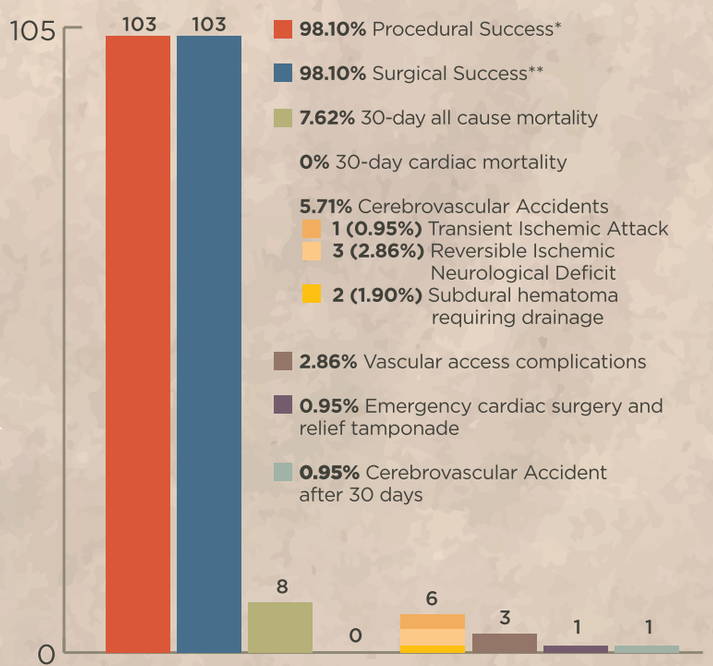
CLINICAL OUTCOMES OUTLINES.indd 75 16/01/2018 7:21 PM

FIGURE 5 *Procedural Attributes (N=105)*



Contrast Volume cc	153.36 ± 79.29

FIGURE 6 *Procedural Outcomes (N=105)*



** Defined as the ability to deliver the valve, valve in optimal position, patient alive, and no moderate to severe aortic regurgitation.*
*** Defined as procedural success and no cardiac mortality at 30 days.*

FIGURE 7 *Valve Sizes Implanted (N=105)*

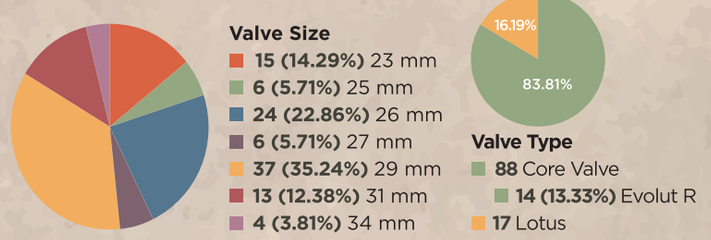


TABLE 1 *Pre-procedural and Post-procedural Follow-up Echocardiographic Parameters (N=105)*

Parameters	Pre-op	Post-op	P-value	Mean Follow-up days
LVEF	58.37 ± 15.25 (n=104)	60.47 ± 11.24 (n=95)	0.2675	728.58 ± 581.20 (n=104)
AVA	0.70 ± 0.29 (n=103)	1.77 ± 0.41 (n=95)	<0.0000001	722.35 ± 580.54 (n=103)
PG	76.97 ± 30.94 (n=104)	18.31 ± 8.76 (n=95)	<0.0000001	728.58 ± 581.20 (n=104)
MPG	46.89 ± 19.96 (n=104)	10.06 ± 4.75 (n=95)	<0.0000001	728.58 ± 581.20 (n=104)
PASP	39.06 ± 21.98 (n=103)	32.28 ± 19.85 (n=95)	0.02365	725.57 ± 583.23 (n=103)

FIGURE 7 *Mean Peak Gradient and AVA Post TAVR 5-year Period*

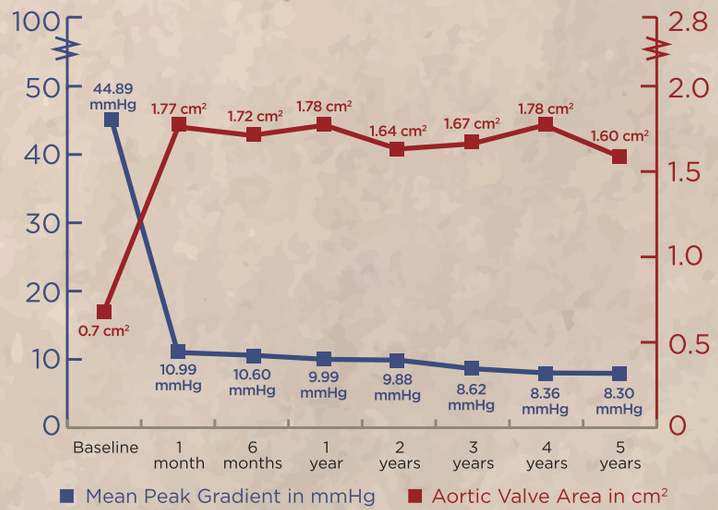
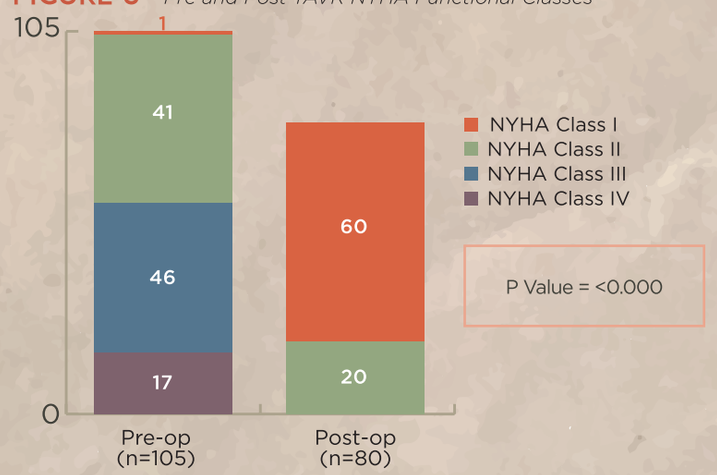


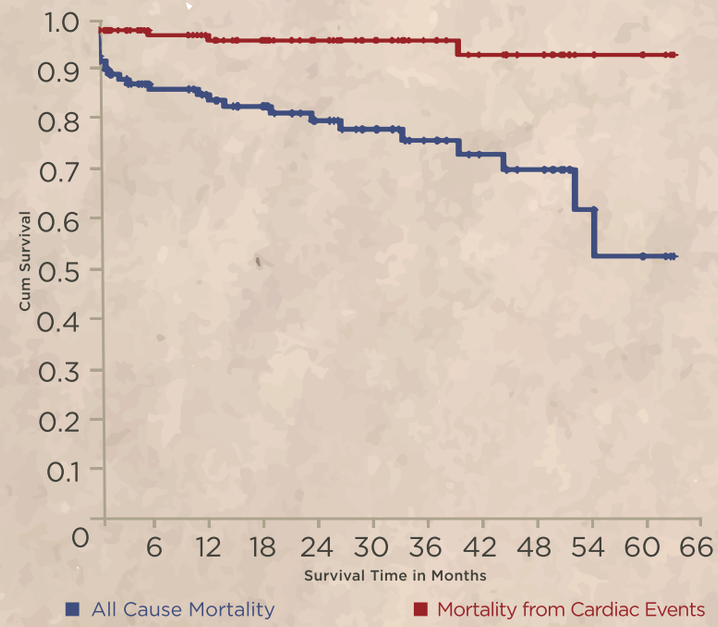
FIGURE 8 *Pre and Post TAVR NYHA Functional Classes*



CLINICAL OUTCOMES OUTLINES.indd 76 16/01/2018 7:21 PM

FIGURE 9

Kaplan Meier Survival Curve—Survival-free from Cardiac Events



Dr. Posas with the Cath Lab and Rad Tech teams.

artery disease, chronic atrial fibrillation, idiopathic pulmonary fibrosis and previous aortic valve or mitral valve replacements (Figure 2). Additional high risk features not included in the standard STS and EUROSCORE included the following: 63 were frail (27 were extremely frail), 22 had hostile chests, 14 were cachectic, 12 were morbidly obese, 12 had porcelain aorta, 1 had severe idiopathic thrombocytopenia and 1 had myelodysplastic syndrome (Figure 3).

The New York Heart Association (NYHA) functional classifications, which identify cardiac disability or the degree of impairment pre-TAVR were as follows: 1 patient in NYHA Class I, 41 in NYHA Class II, 46 in NYHA Class III, and 17 in NYHA Class IV (Figure 4). Follow up functional assessment documented marked and statistically significant improvement in NYHA class after TAVR (p=<0.000). On follow up, most patients are in functional class I (Figure 8).

A total of 117 valves were implanted, 12 patients required two valves, mostly during the initial experience with the non-retrievable Corevalve involving patients with markedly difficult anatomy (Figure 5). Two of the 12 patients required valve-in-valve due to severe paravalvar leak on follow up. The procedural success defined as the ability to deliver the valve, mean gradient less than 20 mmHg and patient alive out of the catheterization laboratory was 98.10 percent, all cause mortality at 30 days was 7.62% and involved extreme risk or inoperable patients (Figure 6). The sizes of valves implanted varied from 23mm to 34mm, valve performance was excellent with persistently low mean gradients and stable AVA on echocardiographic follow up (Figure 7). There was marked and statistically significant improvement in aortic valve area (p<0.0000001), peak and mean gradients (p<0.000001) as well as pulmonary artery pressure (0.023) (Table 1).

Kaplan Meier survival curves demonstrated an 85% one year and 75% 3 year survival (Figure 9). Mortality on follow up was mostly due to non cardiac causes which included cancer, infection, falls and other metabolic problems in extreme-risk patients with multiple, complex co-morbidities and very high mean STS and LE scores.

CONCLUSION

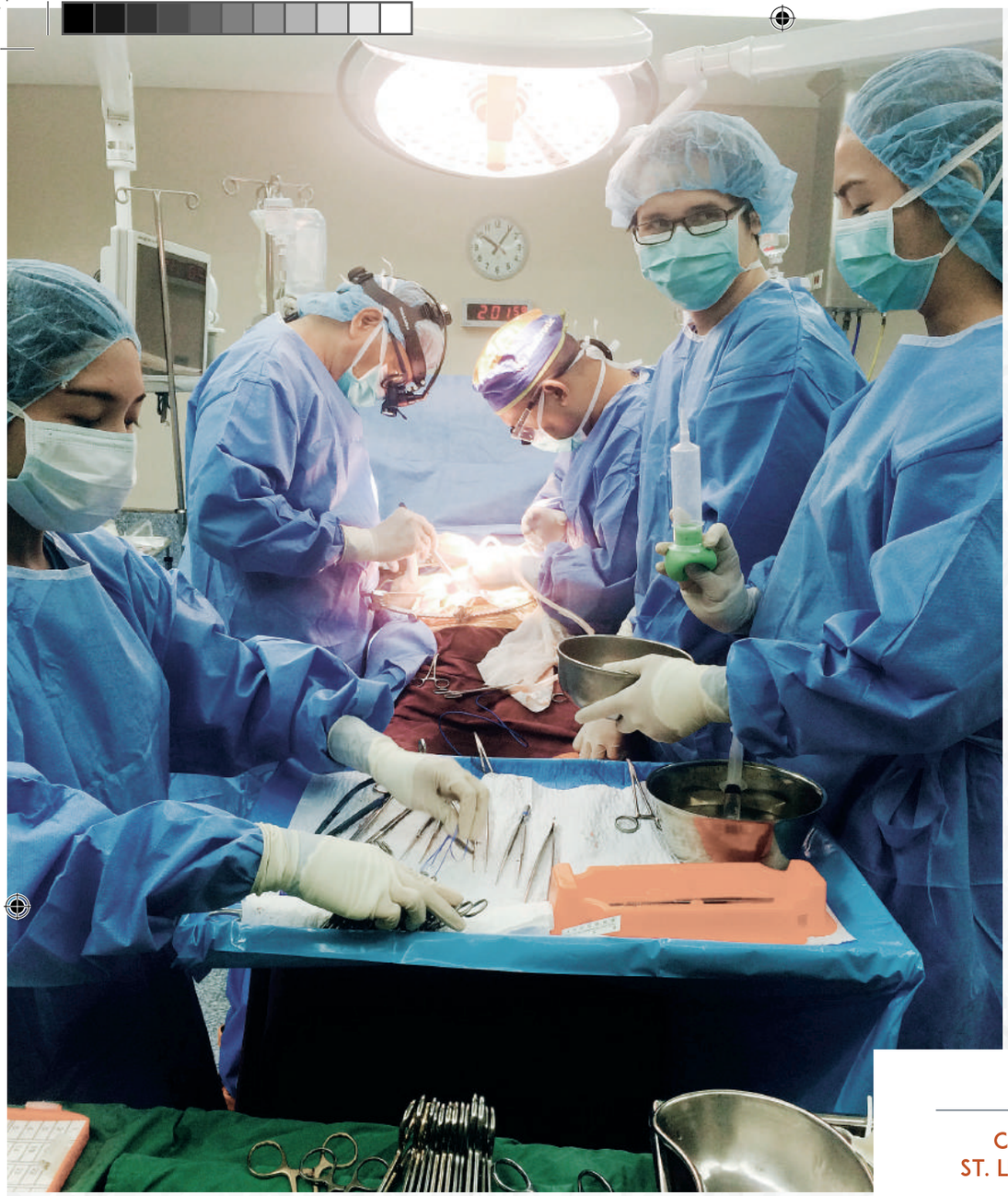
The procedural success rate of TAVR at St. Luke's–Global City is 98.1% despite the highly morbid patient population treated. While the 30-day mortality is 7.6%, the preponderance of events were non-cardiac and in extreme risk or inoperable patients. On follow up, most patients remain in functional class I. Valve performance on follow up is excellent with sustained and statistically significant improvements AVA, mean and peak gradients as well as pulmonary artery pressures. Such findings are comparable to those reported from major centers all over the world.

There is no evidence of valve degeneration on follow up echocardiography. Moderate to severe paravalvular leaks are rare. The observed mortality post-TAVR in this high risk or inoperable patient cohort appears to be due to multiple, complex co-morbidities in extra-high-risk patients and not related to the valve implant itself.

To read about a patient who underwent successful Transcatheter Aortic Valve Replacement, go to page 13 of My St. Luke's Story Book 2.

✚ Data are based on doctor's own research.

CLINICAL OUTCOMES OUTLINES.indd 77 16/01/2018 7:21 PM



"We evaluate them from head to foot," said Dr. Angel Joaquin M. Amante about St. Luke's Medical Center's multidisciplinary approach in evaluating transplant candidates' overall health (cardiovascular, pulmonary, gastrointestinal, endocrine, nutritional), which is key in determining the risks and benefits of treatment.

CENTER FOR ORGAN TRANSPLANTATION
ST. LUKE'S MEDICAL CENTER–QUEZON CITY

KIDNEY TRANSPLANT OUTCOMES

JANUARY 2012 TO DECEMBER 2014

Dr. Amante in a consultation with a donor.

CLINICAL OUTCOMES OUTLINES.indd 78 16/01/2018 7:22 PM

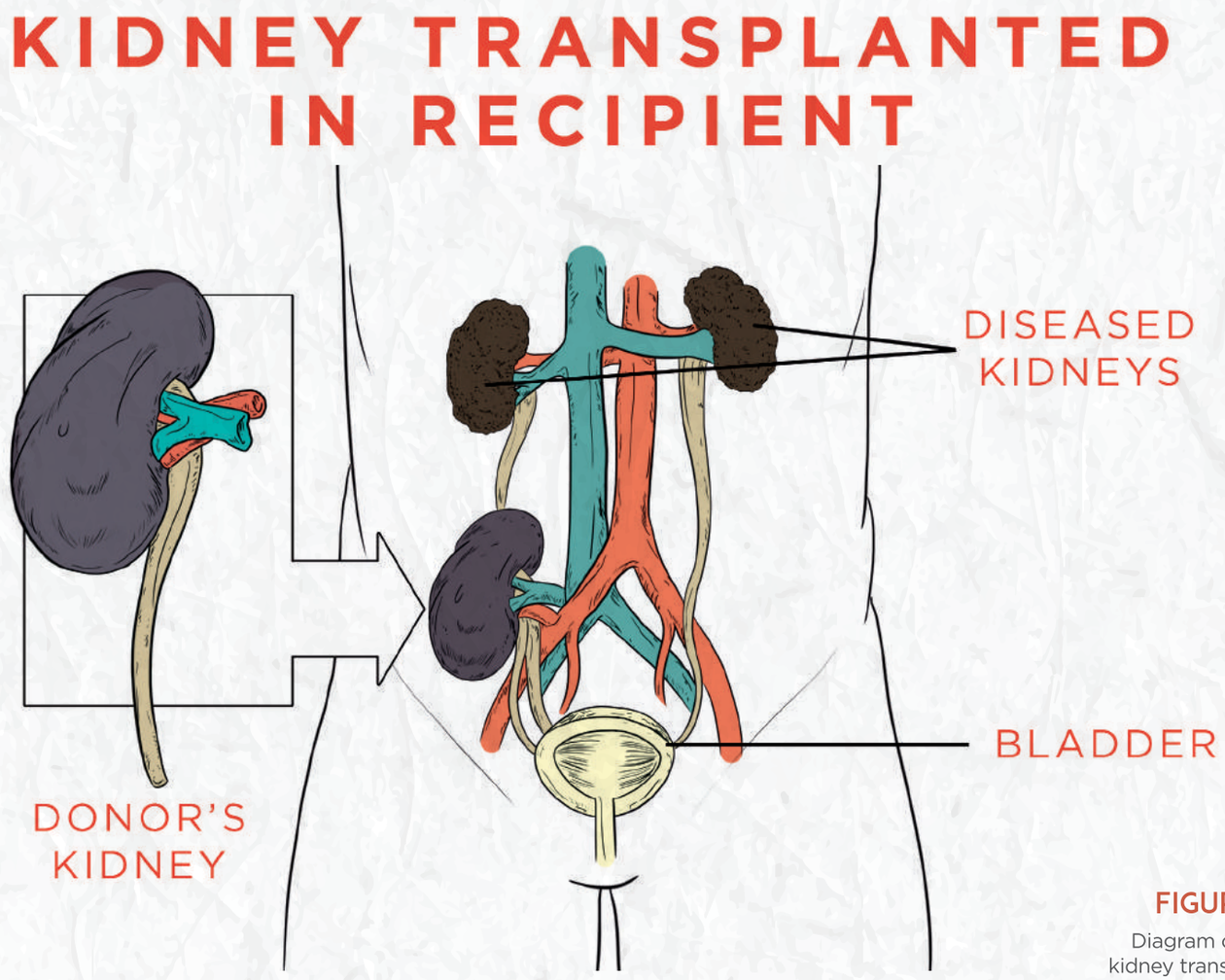


FIGURE 1
Diagram of the kidney transplant from the donor to the recipient.

In irreversible cases of kidney disorder, or at the last stage of renal failure, there are only two options: kidney transplantation or dialysis. Kidney transplant involves the replacement of the kidneys with those from a donor, while dialysis is the clinical blood filtration as a substitute for the normal functioning of the kidneys.

In End Stage Renal Disease (ESRD), kidney transplantation is better than dialysis in offering patients a survival advantage and quality of life. However, kidney transplantation is a high-risk operation requiring proper patient and donor selection and improved quality of care to ensure best results from this form of renal replacement therapy.

Transplant recipients with end-stage kidney failure (ICD Code N18) from January 2012 to December 2014 were included in a study, whose data were gathered from clinical outcomes monitoring forms collected by the transplant coordinator.

PERFORMANCE MEASURES

GRAFT FUNCTION INDICATORS

- Mean value of serum creatinine after one year. Serum creatinine is the amount of waste products in the blood, thus indicating the kidneys' filtration efficiency.
- Mean value of eGFR (estimated glomerular filtration rate) after one year. The eGFR is a test that estimates the volume of blood filtered by the kidneys over a certain period to determine how well they work. This test pertains to the function of the glomeruli, the tiny filters in the kidneys.

PATIENT INDICATORS

- One (1) year patient survival rate

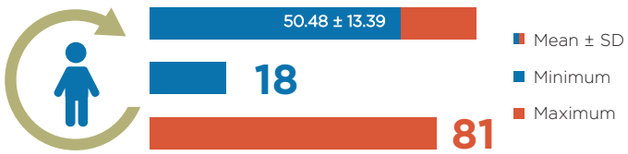
To read about a patient who underwent successful kidney transplantation, go to page 4 of My St. Luke's Story Book 2.

CLINICAL OUTCOMES OUTLINES.indd 79 16/01/2018 7:22 PM

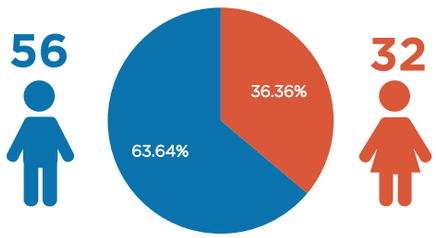
FIGURE 2

Demographic Profile of Kidney Transplant Recipients at St. Luke's Medical Center–Quezon City, January 2012 to December 2014 (N=88)

Age in Years



Gender



Age Group

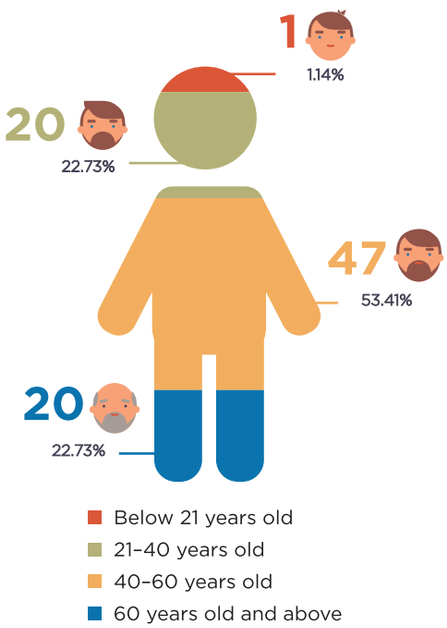
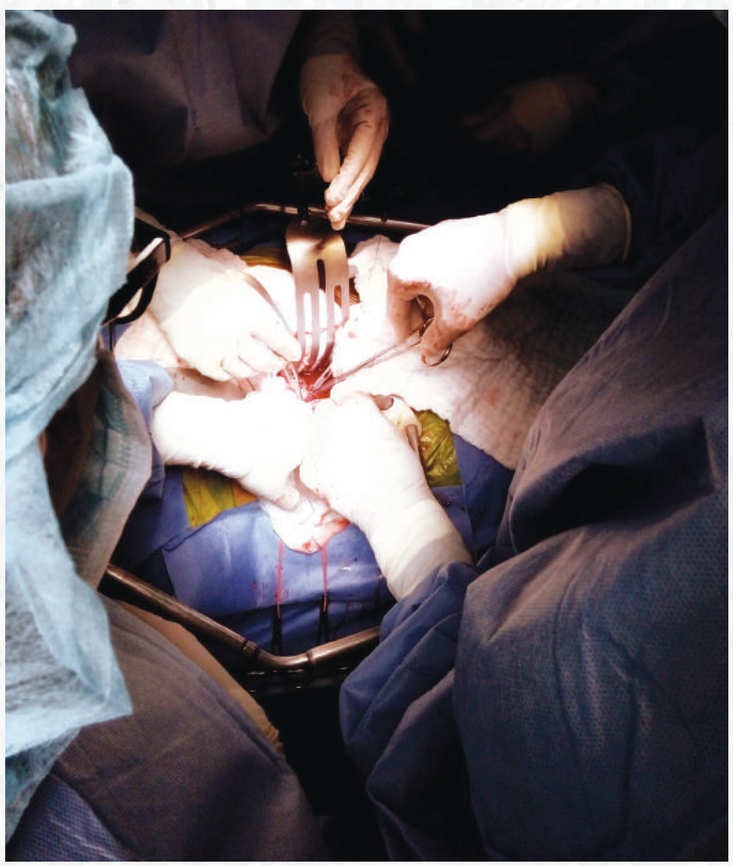
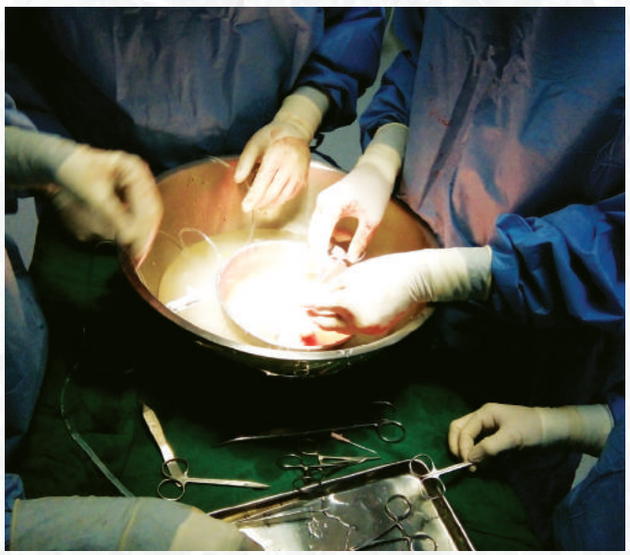
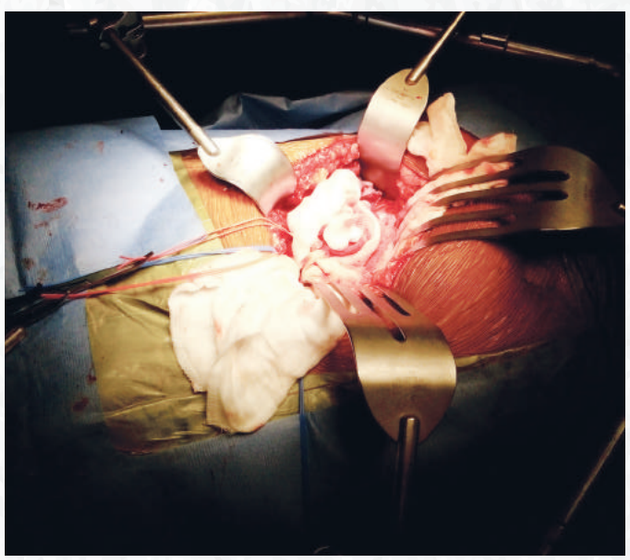


FIGURE 2 summarizes the demographic profile of the 88 kidney transplant recipients at St. Luke's–Quezon City from January 2012 to December 2014. Majority (63.64%) of them were male from the 41-60 age group (53.41%). The mean patient age is 50, with the youngest recipient at 18 and the oldest at 81.



CLINICAL OUTCOMES OUTLINES.indd 80 16/01/2018 7:22 PM





"Ninety percent of transplants in St. Luke's come from living donors, with 10% obtained from deceased donors (severe or traumatic brain injuries, vehicular accidents, cerebral bleeding or stroke)," says Dr. Amante.

FIGURE 3

Clinical Outcomes of Kidney Transplant Recipients
St. Luke's Medical Center—Quezon City
January 2012 to December 2014
(N=88)

Mean serum creatinine value at 1 year post-transplant	**1.32 mg/dl**
Mean eGFR value at 1 year post-transplant	**61.89 ml/min/1.73m²**
Patient survival rate at 1 year post-transplant (Crude)	**97.47% (77 out of 79)**

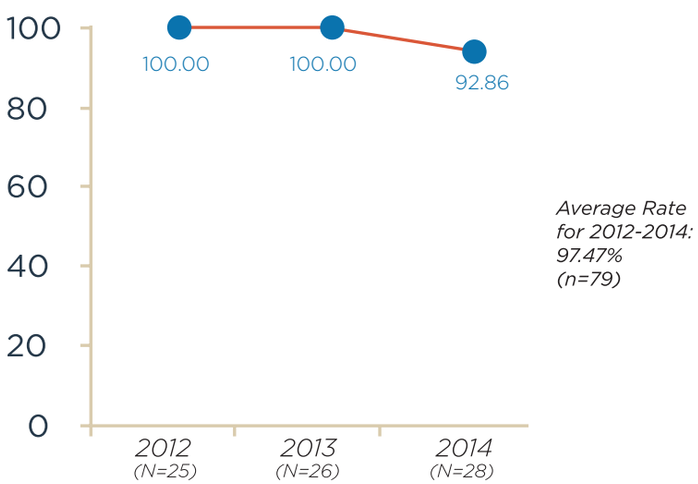
FIGURE 3 presents the clinical outcomes measured after a year of transplant operation. Only three outcomes were measured for this period, namely, serum creatinine, eGFR, and survival rate. The 80 patients posted mean serum creatinine of 1.32 mg/dl and mean eGFR values of 61.89 ml/min/1.73m2.

There were two mortalities from myocardial infarction and brain infection. Nine patients were lost to follow-up. Patient survival rate is defined as the proportion of living patients regardless of graft function.

For the computation of patient survival rate (defined as the proportion of living patients regardless of graft function), the crude survival rate for this period is 97.47% (77 out of 79). For the total of 88 patients, using the best case scenario (where all lost to follow-up patients are still considered living), the survival rate is 97.72%. With the worst case scenario (where all lost to follow-up patients are considered dead), the survival rate is 87.50%.

FIGURE 4

Three-Year Patient Survival Rate
Center for Organ Transplantation
2012 to 2014



Survival rates are benchmarked on the 95% established rate by the Renal Disease Control Program (REDCOP) of the Philippine National Kidney Transplant Institute (NKTI) and United Network for Organ Sharing-Scientific Registry of Transplant Recipients (UNOS-SRTR). From 2012 to 2014, the average three-year patient survival rate of 97.47% is at par with local and international standards.

CLINICAL OUTCOMES OUTLINES.indd 81 16/01/2018 7:22 PM

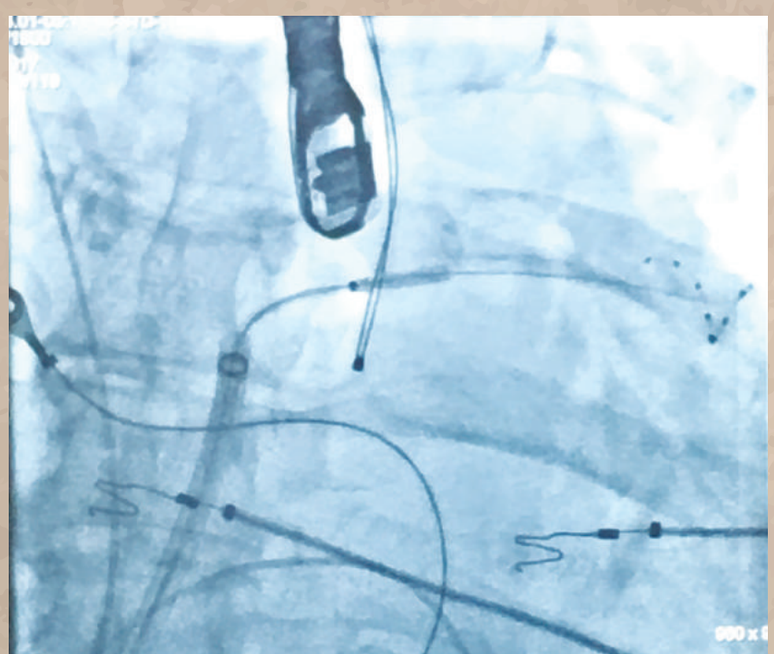
HEART INSTITUTE
CARDIAC ARRHYTHMIA AND ATRIAL FIBRILLATION SERVICE
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

CUTTING-EDGE TREATMENT FOR ATRIAL FIBRILLATION

ANOTHER FIRST IN THE PHILIPPINES FROM ST. LUKE'S

The St. Luke's Electrophysiology team performing cryoballoon ablation, a new state-of-the-art management for atrial fibrillation.

CLINICAL OUTCOMES OUTLINES.indd 82 16/01/2018 7:22 PM



AF ablation by Electrophysiologists showing the cath lab set up (top), Cryoconsole (middle), and inflated cryoballoon as apposed to a pulmonary vein (bottom).

St. Luke's Medical Center–Global City recently acquired a CryoConsole Cardiac CryoAblation System used in the management of abnormal heart rhythms. The first and only one of its kind in the Philippines, cryoballoon ablation is the cutting-edge technology in the treatment of atrial fibrillation (AF).

Atrial fibrillation is the most common clinically significant arrhythmia that may lead to stroke, heart failure, hospitalization, and even death. It is estimated that one out of four individuals aged 40 years will develop AF. According to local statistics, it may be diagnosed in two per 1,000 adults in the general population.

In AF, the atria (the upper chambers of the heart) move rapidly and irregularly, typically triggered by abnormal impulses coming from the pulmonary veins. These veins are the blood vessels connecting the lungs to the left atrium, which are the foci for AF propagation in 90% of cases. Individuals with AF usually complain of palpitations, shortness of breath, and fatigue. Unfortunately, some patients are asymptomatic and a massive stroke may be their initial presentation.

Atrial fibrillation may be managed pharmacologically using antiarrhythmics or invasively through ablation. Studies have shown that the efficacy rate of drugs in maintaining normal heart rhythm is 23%, while that of catheter ablation is 78%. Catheter ablation is a minimally invasive procedure that utilizes tubes that are inserted into the groin and advanced to the left atrium, targeting the pulmonary veins. In radiofrequency ablation (RFA), the catheter's metallic tip releases electricity that heats up the tissues it is in contact with at temperatures of 30 to 35°C. In cryoballoon ablation, the CryoConsole delivers liquid nitrogen into the balloon located at the end of the catheter, freezing the surrounding tissues at temperatures of negative 40 to 50°C. The balloon adheres to the atrial tissues thereby stabilizing the catheter during ablation. In either technique, the fibers connecting the pulmonary veins to the left atrium are destroyed, preventing the spread of abnormal electrical impulses that initiate and perpetuate AF. An RFA procedure may last six hours while a cryoablation takes an average of three hours to perform. Patients undergoing catheter ablation are hospitalized for four days and may gradually resume usual activities in seven days.

Trials have shown that the success and complication rates of RFA and cryoballoon ablation of paroxysmal AF are comparable. In addition, recent studies have demonstrated that catheter ablation may be considered as first-line management of atrial fibrillation and may be performed even in more persistent conditions.

Once again, St Luke's–Global City leads the Philippines in world-class management of atrial fibrillation through cryoballoon ablation.

CLINICAL OUTCOMES OUTLINES.indd 83 16/01/2018 7:23 PM

Dr. Juliet L. Gopez-Cervantes, Head of the St. Luke's–Global City Institute of Digestive and Liver Diseases (front row, center) with the team of the Center for Advanced Gastrointestinal Endoscopy (front, L–R): Dr. Jonard T. Co, Dr. Marie Antoinette D. Lontok, Dr. Joseph C. Bocobo, Dr. Marvin D. Basco, Dr. Ian Homer Y. Cua, Dr. Rachel Marie A. Cruz, Dr. Rodel Leonardo R. Galang, (second row, L-R): Dr. Patricia Anne I. Cabral-Prodigalidad, Dr. Arsenio C. Caburnay, Dr. Antonio C. Comia, Dr. John Arnel N. Pangilinan, Dr. Tsukasa Ishida, Dr. Oliver L. Canlas, Dr. Alexandra S. Laya, Dr. Edgardo M. Bondoc.

INSTITUTE OF DIGESTIVE AND LIVER DISEASES
ST. LUKE'S MEDICAL CENTER–GLOBAL CITY

ST. LUKE'S TEAMS UP WITH JAPAN'S KOBE UNIVERSITY

The Kobe University Graduate School of Medicine in Japan has partnered with St. Luke's Medical Center–Global City's Institute of Digestive and Liver Diseases (IDLD) for the continuous transfer of technology and skills, particularly in advanced gastrointestinal endoscopy.

The first in Asia, the partnership enables Filipino gastroenterologists to learn and apply highly advanced Japanese technology and skills in performing new endoscopic procedures, holding clinical conferences and conducting clinical research.

This resulted in the opening of the country's first Center for Advanced Gastrointestinal Endoscopy, a diagnostic and therapeutic center using highly advanced technologies from Japan and manned by experts in upper and lower gastrointestinal diseases.

The Center has a Japanese gastroenterologist as adviser to support the development of endoscopic skills among the staff.

Developments in endoscopy from Kobe University will be continuously transferred to St. Luke's–Global City, with the aim of being at par with Japan, considered a pioneer in the field of endoscopy. Patients based in the Philippines would not have to travel to Japan to get treatment.

The Center will focus on preventing, diagnosing, and treating difficult medical and gastrointestinal problems, including complicated polyps especially in the colon.

Many colon, esophageal, and stomach cancers can be prevented with early diagnosis and through minimally invasive, endoscopic means, specifically colon

CLINICAL OUTCOMES OUTLINES.indd 84 16/01/2018 7:23 PM

cancer, which starts with a single polyp. Without early detection, there is a 40-60% chance of the polyp becoming cancerous through time.

People are advised to undergo colonoscopy by age 50, when polyps can be easily removed through endoscopy. Polyps require endoscopes with ultra-high-definition imaging for early detection as these can be missed by the regular ones.

As many cancers, including colon, stomach, and esophageal, originate from the innermost lining or mucosal surface of the gastrointestinal tract, early detection of polyps is imperative.

Among the therapeutic procedures performed in the Center for that purpose are endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD).

EMR removes pre-cancerous or early cancer lesions from the mucosa of the gastrointestinal tract, helping prevent or treat these cancers. If the lesions have not spread beyond the surface layers of the gastrointestinal lining, or there is no lymphovascular invasion, then EMR is curative for these growths.

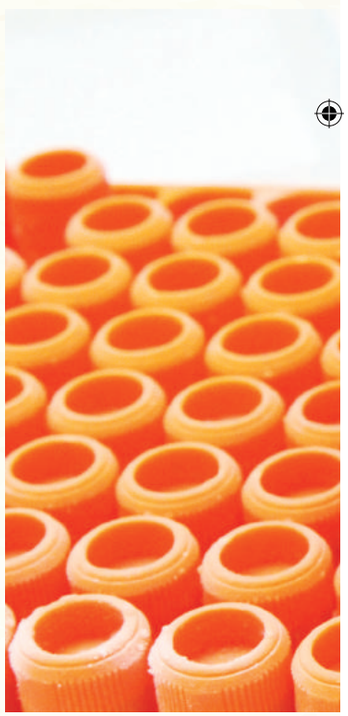
In ESD, even large and deep lesions are endoscopically removed with a specialized knife through submucosal dissection under the lesion.

First developed as a non-operative procedure for early gastric neoplasia, ESD dramatically improves procedural techniques and endoscopic equipment applications, expanding its reach to locations throughout the gastrointestinal tract for treatment of deep, non-epithelial lesions.

Both ESD and EMR allow the endoscopic removal of polyps or lesions without open surgery.
With these new, highly advanced and state-of-the-art endoscopes operated by highly skilled gastroenterologists at the Center for Advanced Gastrointestinal Endoscopy, many patients can be saved from gastrointestinal cancers.

Clockwise from top left:
Dr. Juliet L. Gopez-Cervantes shows an image of a polyp.
St. Luke's and Kobe University gastroenterologists perform an endoscopy. The Center utilizes the Olympus EVIS Lucera Elite 290 series endoscopy system, a highly advanced, state-of-the-art technology with ultra high-definition imaging.

CLINICAL OUTCOMES OUTLINES.indd 85 16/01/2018 7:24 PM



CLINICAL OUTCOMES OUTLINES.indd 86 16/01/2018 7:24 PM

Clockwise from left: The carefully collected and handled specimens, such as blood and other body fluids, solid tumor tissues, cellular material, and other biopsied materials are retrieved from cancer patients who underwent biopsy, surgery or blood extraction. St. Luke's Human Cancer Biobank preserves specimens in the original state they were taken and are stored at ultra low temperatures in biofreezers or liquid nitrogen tanks for future use in research. Each specimen is equipped with an electronic specimen tracking and inventory system and a high level of security system to protect the confidentiality of sensitive patient data and prevent unauthorized use of them.

RESEARCH AND BIOTECHNOLOGY

ST. LUKE'S HUMAN CANCER BIOBANK: THE FUTURE OF CANCER CARE

The Research and Biotechnology Group and Cancer Institute of St. Luke's Medical Center–Quezon City launched the country's first Human Cancer Biobank on May 28, 2015. First in the country, its primary aim is to collect tumor specimens from patients with cancer, preserve and store these for study by St. Luke's scientists and cancer experts and analyze the cells on a genetic and molecular level to discover their fundamental components. This groundbreaking facility charts a viable path toward the future of cancer care.

Imagine a world wherein patients receive treatments that tailor fit an individual based on their body and particular disease. Correspondingly, these patients can therefore be tested to determine if they are prone to developing serious illnesses in the future and ultimately prevent this from happening by altering genetic make up.

"This is the Human Cancer Biobank Project that we have conceptualized last year, as we saw the need for more precise treatment options for patients", exclaimed St. Luke's Medical Center President and CEO Dr. Edgardo R. Cortez.

Through collaboration with other experts in the country and throughout the world, the St. Luke's Human Cancer Biobank is the breakthrough project that will pave the way for invention and discovery of innovative methods of diagnosis and treatment of patients for a better tomorrow.

CLINICAL OUTCOMES OUTLINES.indd 87 16/01/2018 7:24 PM

The St. Luke's Transoral Robotic Surgery (TORS) Team (L–R): Dr. Keith A. Aguilera, Dr. Benjamin S.A. Campomanes, and Dr. William L. Lim.

DEPARTMENT OF OTORHINOLARYNGOLOGY–
HEAD AND NECK SURGERY
ST. LUKE'S MEDICAL CENTER-GLOBAL CITY

ST. LUKE'S MEDICAL CENTER PIONEERS IN TRANSORAL ROBOTIC SURGERY IN THE PHILIPPINES

The first transoral robotic surgeries in the Philippines were performed at the St. Luke's Medical Center–Global City in 2016.

The surgeries were conducted on three patients by a team of ENT-HNS doctors using the third generation da Vinci Si robotic surgical system.

Transoral robotic surgery or TORS is indicated for patients with tumors in the oral cavity, pharynx, and larynx. It is also used to address obstructive sleep apnea (OSA).

Unlike traditional or open surgery, TORS does not involve cutting through the jaw, neck, or tongue. For a surgeon to access hard-to-reach areas such as the base of the tongue, hypopharynx, and larynx. The surgical area is magnified up to 10 times its actual size, enabling surgeons to see a target tumor up close and avoid unnecessary cuts to nerves or arteries.

Compared with transoral laser surgery where a laser beam just aims through line of sight or a straight line and cannot reach deep into the throat, robotic instruments easily enter the mouth and throat. They widen the range of motion, twisting and turning just like the human wrist, allowing the surgeon to excise an entire tumor even in deep areas.

"With TORS, there is no external scar, and the patient enjoys a shorter hospital stay and faster recovery. Post-operatively, there is also less pain and discomfort," says transoral robotic surgeon Dr. William Lim, head of the Department of Otolaryngology–Head and Neck Surgery at St. Luke's–Global City.

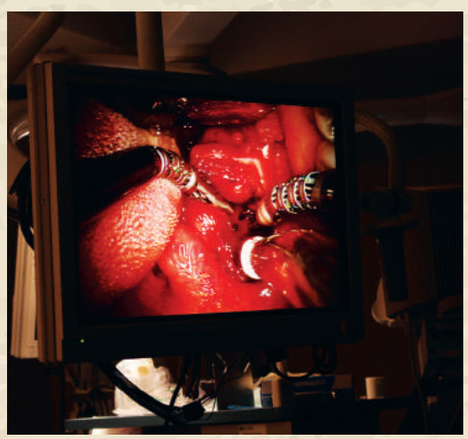
The other members of the TORS team are Dr. Benjamin Campomanes and Dr. Keith Aguilera.

Conditions for TORS include tonsillar cancer, tongue cancer, pharyngeal and hypopharyngeal cancer, supraglottic laryngeal carcinoma and sleep apnea syndrome.

Over 800 successful robotically assisted surgeries have been performed by St. Luke's Medical Center for urologic, gynecologic and general surgery cases.

The new robotic procedure provides patients with another treatment option with less trauma, faster recovery and, eventually, better quality of life.

CLINICAL OUTCOMES OUTLINES.indd 88 16/01/2018 7:25 PM



St. Luke's robotic surgeons performing Transoral Robotic Surgery (TORS).

CLINICAL OUTCOMES OUTLINES.indd 89 16/01/2018 7:25 PM

INDEX

A

Alzheimer's Disease Assessment Scale-Cognitive Subscale (ADAS-Cog), 20

Aortic valve stenosis, 74

Appendicitis, 22

B

Berlin Frankfurt Munster Consortium Hospitals, 42

Brain Attack Team, St. Luke's Medical Center–Global City, 58

Breast Center, St. Luke's Medical Center–Quezon City, 38

Bronchopulmonary dysplasia, 15

C

Center for Advanced Gastrointestinal Endoscopy, 84

Clinical Care Program for Primary Stroke, 57

Cochlear implant, 12

Coronary heart disease, 71

CryoConsole Cardiac CryoAblation System, 83

D

Dana Farber Institute, St. Jude Children's Research Hospital, 42

Degenerative osteoarthritis, 51

Disability Assessment for Dementia, 20

E

Endoscopic Laser Posterior Cordotomy with Partial Arytenoidectomy, 48

Endoscopic mucosal resection (EMR), 85

Endoscopic submucosal dissection (ESD), 85

End Stage Renal Disease, 79

Estimated glomerular filtration rate (eGFR), 79

G

Gallstones, 28

Geriatric Depression Scale (GDS), 20

H

Health Services Outcomes Research (HSOR), 33

Human Cancer Biobank, 87

I

Instrumental Activities of Daily Living (IADL), 20

K

Kidney stone, 62

L

Laparoscopic Trocar Placement for Appendectomy, 24

Larynx, 46

CLINICAL OUTCOMES OUTLINES.indd 90 16/01/2018 7:25 PM

Laser arytenoidectomy, 47
Laser posterior cordectomy, 47
Low Income Chemotherapy, 42

M

Mastectomy, 41
Mild cognitive impairment, 20
Mini Mental State Examination (MMSE-P), 20
Minimally Invasive Robotics Surgery Center (MIRSC), 33
Modified Rankin Scale, 61
Montreal Cognitive Assessment (MoCA-P), 20

N

National Cancer Institute, 44
National Institute of Health Stroke Scale (NIHSS), 61
National Registry for Acute Myocardial Infarction, 71
Neuropsychiatric Inventory (NPI), 20

O

Obstructive sleep apnea, 88
Open heart surgical valve replacement, 74
Osteoarthritis, 51

P

Pediatric Blood Disorders and Tumor Unit, St. Luke's Medical Center–Quezon City, 42
Percutaneous coronary intervention (PCI), 70
Permanent hearing loss, 11
Picture Archiving and Communications System (PACS), 72
Physical Self-Maintenance Scale (PSMS), 20
Preterm births, 15

R

Recombinant Tissue Plasminogen Activator, 61
Retinopathy of prematurity, 15
Robot-assisted Radical Prostatectomy, 67

S

Severe Intraventricular Hemorrhage, 15
ST segment elevation myocardial infarction (STEMI), 70
Stroke Service, St. Luke's Medical Center–Quezon City, 54

T

Thyroid disorders, 33
Total hip replacement, 52
Total joint replacement, 51
Total knee replacement, 52
Totally extraperitoneal (TEP) repair, 36
Tracheostomy, 47
Transabdominal preperitoneal (TAPP) repair, 36
Transcatheter Aortic Valve Replacement, 75
Transoral robotic surgery (TORS), 88

U

Universal Newborn Hearing Screening and Habilitation Program, 13
UNHS Act of the Philippines (R.A. 9709), 11

CLINICAL OUTCOMES OUTLINES.indd 91 16/01/2018 7:25 PM